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**TRANSMITTAL LETTER
(General - Patent Pending)**

Docket No.
200-0646

In Re Application Of: **Juliet C. Kraal et al.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/630,918	August 2, 2000	T. Stevens	33481	2123	7908

Title: **SYSTEM AND METHOD OF SUBJECTIVE EVALUATION
OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT
USING A VIRTUAL REALITY**

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Petition Under 37 C.F.R. 1.181 To Withdraw The Holding of Abandonment, and return postcard.

in the above identified application.

- ☐ No additional fee is required.
- ☒ A check in the amount of **\$130.00** is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. **02-2712** as described below.
 - ☐ Charge the amount of
 - ☒ Credit any overpayment.
 - ☒ Charge any additional fee required.
- ☐ Payment by credit card. Form PTO-2038 is attached.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

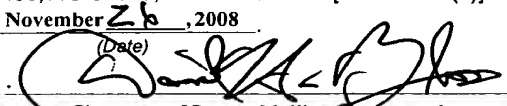

Signature

Dated: November 26, 2008

Daniel H. Bliss (Reg. No. 32,398) [0693.00239]
Bliss McGlynn, P.C.
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Record I.D. 81056549

cc:

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on November <u>26</u> , 2008 (Date)  Signature of Person Mailing Correspondence Daniel H. Bliss Typed or Printed Name of Person Mailing Correspondence



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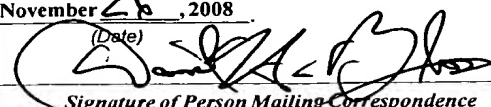

Signature

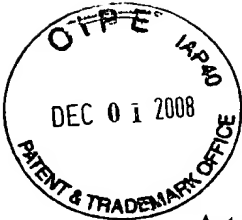
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(Date)  Signature of Person Mailing Correspondence
Daniel H. Bliss Typed or Printed Name of Person Mailing Correspondence



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit: 2123)
)
Examiner: T. Stevens)
)
Applicant(s): Juliet C. Kraal et al.)
)
Serial No.: 09/630,918)
)
Filing Date: August 2, 2000)
)
For: SYSTEM AND METHOD OF)
SUBJECTIVE EVALUATION OF A)
VEHICLE DESIGN WITHIN A VIRTUAL)
ENVIRONMENT USING A VIRTUAL)
REALITY)
)

**PETITION UNDER 37 C.F.R.
1.181 TO WITHDRAW THE
HOLDING OF ABANDONMENT**

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In accordance with 37 C.F.R. 1.181, the undersigned attorney petitions that the holding of abandonment for the above-identified application be withdrawn. Enclosed is a check in the amount of \$130.00 for the fee required under 37 C.F.R. 1.17 (m). The Commissioner is also authorized to charge any further fees which may be due to our Deposit Account No. 02-2712. The pertinent facts are as follows:

1. In connection with the above-identified application, the United States Patent and Trademark Office mailed an Office Action on September 26, 2003, indicating that the drawings were objected to under 37 C.F.R. 1.84 and 1.83(a) and that proposed drawing corrections or corrected drawings were required, as evidenced by Exhibit A.

CERTIFICATE OF MAILING: (37 C.F.R. 1.8) I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service with sufficient postage as First Class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on November 26, 2008, by [Signature]
Daniel H. Bliss

2. On December 26, 2003, Counsel for Applicants filed an Amendment along with proposed corrected drawings for approval, as evidenced by Exhibit B.

3. On January 13, 2004, Counsel for Applicants filed corrected drawings, as evidenced by Exhibit C.

4. The United States Patent and Trademark Office mailed an Office Action on March 22, 2004, indicating that the corrected drawings filed on January 6, 2004 (sic January 13, 2004) were accepted, as evidenced by Exhibit D.

5. Subsequently, a Notice of Allowance was mailed on June 13, 2008, along with a Notice of Allowability, which required corrected drawings and stated that the drawings received on January 15, 2004 were not annotated as “replacement sheets” and that correction before payment of the issue fee was required, as evidenced by Exhibit E.

6. Since the corrected drawings filed in paragraph 4 were previously accepted by the Examiner, Applicants were not required to file corrected drawings annotated as “replacement sheets” as requested in paragraph 5, as evidenced by Exhibit F.

7. The United States Patent and Trademark Office mailed a “Notice of Abandonment” on October 7, 2008 to Counsel for Applicants stating that no corrected drawing had been received as required by, and within the three-month period set in, the Notice of Allowability (Form PTO-37), as evidenced by Exhibit G.

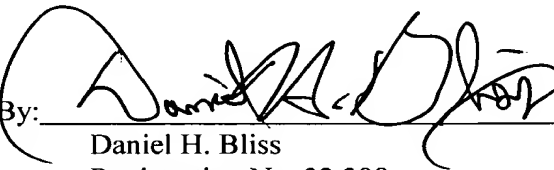
8. Petitioner will lose its rights and/or suffer irreparable damage if the above-identified application will have become abandoned for failure to file the corrected drawings in paragraph 6 in response to the Notice in paragraph 5 if the corrected drawings of paragraph 3 are not held as accepted in paragraph 4.

Accordingly, this Petition is being submitted to withdraw the holding of abandonment on the above-identified application so that the application may proceed to issuance. The undersigned

attorney requests that the Petition be granted and the fee for this Petition be refunded to Applicants because Applicants complied with the Patent Office rules.

If for some reason this Petition is not granted in accordance with 37 C.F.R. 1.137(b), the undersigned attorney requests that the above-identified application be revived, as this application was unintentionally abandoned, and enter the corrected drawings in paragraph 6. The Commissioner is authorized to charge the Deposit Account No. 02-2712 in the amount for the fee required under 37 C.F.R. 1.17(m) and any other fees which may be due.

Respectfully submitted,

By: 
Daniel H. Bliss
Registration No. 32,398

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Troy, Michigan 48084
(248) 649-6090

Date: November 26, 2008

Attorney Docket No.: 0693.00239
Ford Disclosure No.: 200-0646



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908

7590 09/26/2003

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EXAMINER

STEVENS, THOMAS H

ART UNIT PAPER NUMBER

2123

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

RECEIVED

SEP 29 2003

BLISS McGLYNN, P.C.

Office Action Summary

Application No.

09/630,918

Applicant(s)

KRAAL ET AL.

Examiner

Thomas Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6,7,8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 have been examined.
2. Claims 1-20 have been examined and rejected.

Objections

Abstract

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The abstract is more than 150 words.

Drawings

4. The drawings filed are objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the following reasons:

Margins: The sheets must not contain frames around the sight (i.e., the usable surface), but should have scan target points (i.e., cross-hairs) printed on two outer-corner margin corners. Each sheet must include a top margin of at least 2.5 cm. (1 inch), a left side margin of at least 2.5 cm. (1 inch), a right side margin of at least 1.5 cm. (5/8 inch), and a bottom margin of at least 1.0 cm. (3/8 inch), thereby leaving a sight no greater than 17.0 cm. by 26.2 cm. on 21.0 cm. by 29.7 cm. (DIN size A4) drawing sheets, and a sight no greater than 17.6 cm. by 24.4 cm. (6 15/16 by 9 5/8 inches) on 21.6 cm. by 27.9 cm. (8 1/2 by 11 inch) drawing sheets.

Figures 1 and 2 top left margins are unacceptable.

Art Unit: 2123

Character of lines, numbers, and letters. All drawings must be made by a process, which will give them satisfactory reproduction characteristics. Every line, number, and letter must be durable, clean, black (except for color drawings), sufficiently dense and dark, and uniformly thick and well defined. The weight of all lines and letters must be heavy enough to permit adequate reproduction. This requirement applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. Lines and strokes of different thickness may be used in the same drawing where different thickness have a different meaning.

The lines, numbers and letters for figures 1-5 are not uniformly thick and well defined, clean, nor durable.

Figure 1: As a stand-alone document, items 62 and 42 are unclear as to whose doing the monitoring?

Figure 4: As a stand-alone document, the information is unclear. Annotation of phrases to each piece of information is necessary.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features canceled from the claim must be shown:

Claim 7: *A method as set forth in claim 1, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population.* None of the drawings state verbatim the previous information.

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No new matter should be entered. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Socks (5,831,584) et al in view of Walker et al. The numbers in parenthesis represent locations of information in both Socks and Walker.

8. Socks discloses an item and process in the genre of virtual reality by sensing for simulation two virtual objects: a person's hand and an automobile.

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The person wears goggles, which project an image of a virtual vehicle, as well as a virtual image of the person's hand and any objects, such as coffee cups, that the person may grasp in his hand. This type of simulator composes of a person sitting in a virtual reality vehicle simulator; exercising typical physical movements inside a vehicle: depressing actual brake and accelerator pedals, A position sensing system senses the position of a marker that is attached to a marked portion of the person's hand, e.g., the back of the hand. The person may be tasked to manipulate a virtual object, e.g., a virtual pushbutton, with a contact portion of his hand, e.g., the index finger. To calibrate the distance between the marked and contact portions so that a virtual image of the hand accurately may be displayed, a control surface is positioned adjacent the seat such that the person can manipulate the control surface. Based on the manipulation, the distance between the marked and contact portions is determined, thus calibrating the size of the virtual hand to accurately model the person's actual hand. (Socks: Abstract)

As shown in FIG. 1, the person (16) can view a visual display element, such as goggles (26) which are worn by the person (16). In accordance with the present invention, the goggles (26) are suitable virtual reality goggles known in the art which include left and right two- or three-dimensional visual display screens which respectively present to the person's left and right eyes a virtual image of the actual space (12). It is to be understood that the virtual image of the space (12) includes images of the actual components in the space (12), as a person sitting in the seat (14) would actually see the components.

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Also, the virtual image of the space (12) that is presented by the goggles (26) includes images of simulated objects that are in the virtual space but not in the actual space, as the objects are intended to be seen by a person sitting in the seat (14) were the objects actually present at their simulated location in the space (12). Additionally, the image of the virtual space (1212) presents an image of a virtual hand 1818 that is located relative to the virtual space (1212) analogously to where the actual hand 18 is located relative to the actual space (12). In accordance with vehicle simulation, the person (16) can attempt to manipulate one or more of the virtual objects shown on the goggles (26), and in so doing, observe the image of his virtual hand (1818).

(Socks: Figures 1-3)

However, all previously stated actions to the simulator provide significant information in modifying, improving the ergonomic aspects of car interiors. Although Socks discloses virtual hand as the integral feature, Socks however doesn't expressly cover virtual reality simulation by way of displacing sensors throughout the person's body, as describe by Walker et al.

Walker et al discloses a system that integrates a plurality of different groups of sensors for monitoring the movements of a person wearing the data suit. In the preferred embodiment, a first group of sensors generates data to determine body position and orientation of the suit to generally control the position and orientation of an object, or character in a virtual reality scene.

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Any movement by the wearer, including wrist, arm and foot movements, generates data indicative of movement. (Walker :column 2, Summary of Invention). All numbered parenthesis reflect data from figure 1 unless otherwise stated.

The data is transmitted to the computer for processing in real time within a virtual reality program. The movement indicating data is continuously processed by the computer so that an object, such as a cartoon figure or character in a virtual reality program, has bodily movements that substantially mimic the movements of the wearer. The data generated by the wearer's movements may be used to control cartoon characters, which impersonate an actor's performance in "real time" or any desired object as determined by the program. The device assisting in funneling the data comprises of three sensors: magnetic body position and orientation sensors; bend sensors and twist sensors. (Walker: columns 3-4)

All three sensors are connected to wires or sensing section which includes a sensor cable coupled to a transducer. This flexible support cable is provided for supporting the sensor cable. The support cable is provided to control flexure to the sensor cable by maintaining the curvature of the sensor along a selected axis and to prevent inadvertent flexure or crimping of the cable. A guide tube (68) is disposed over the support cable (66) and interposed between the cables (66), (64) to allow relative longitudinal movement there between. The guide tube (68) preferably comprises a resilient material, such as extruded nylon, and has a smooth inner surface (70) to allow the support cable (66) to move freely about therein.

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The support cable (66) has a diameter of approximately 1/4 inch and preferably comprises a flexible metal alloy, such as brass. (18) The support cable 66 and guide tube (68) are disposed in an opening (72) in the housing (58) and are secured therein to couple the cable (66) and tube 68 to the housing (58). The support cable 66 and guide tube (68) are secured to the housing (58) to prevent the sensing section (56) from detaching from the signal generating section (54). (Walker: Sheet 4 of 6)

Each signal involves an analog-to-digital (A-D) signal converter (154) provides a representative data value for each of the signals generated by the bend sensors (16) and pressure sensors (18). The A-D converter (154) may have an input (156) coupled to the data bus (148) to receive analog signals and have an output (158) coupled to the processor (150) for providing the processor (150) with digital data representing the movement indicating signals. (Walker: 16,18—figure 1; 148,150,154 –figure 10)

Alternatively, the A-D converter (154) may comprise a program stored in the memory device (152) and invoked by the processor, or may comprise a portion of the processor (150) itself (38) After the analog signals are converted to digital values, the data is normalized to provide signals indicating actual movement of the articulations of the wearer (20). The data is normalized to calibrate the bend sensors (16) to accommodate varying ranges of motion, for example, of different wearers of the invented system (10).

The calibration procedure enables the transducers (62) and potentiometer (122) to provide signals to the data unit (142) within a desired arbitrary data range for determining the range of motion of the monitored articulations. (Walker: 38-figure 3; 142,152,154-figure 10; 62-figure 7)

Simultaneously, the data from the position and orientation sensors is received by processing computer for determining the position and orientation of the wearer. The processing computer to generate data indicating the position and orientation of the wearer processes the signals. The data from the data collection unit is fed into a main computer for processing while the position and orientation data is also processed. The data is processed and fed in real time to control the program, such as the virtual reality program, running on the computer. Thus, the plurality of movement indicating sensors of the preferred embodiments of the invented system generate and transmit data indicative of any movements of the wearer. Movements include wrists, arm and foot movements are transmitted to the main computer for processing data generated by the suit in real time. The movement indicating data is continuously processed so that an object, such as a character in a virtual reality program running on the computer, has corresponding real time movements analogous to the movements of the wearer.(Walker: column 5, paragraphs 3 and 4)

One of ordinary skill-level in the art at the time of invention would have modified the teachings of Socks, since it would have been obvious to provide sensors to every part of the body for an improved human representation.

Searching for the roomiest yet safest car interiors is ubiquitous in the automotive industry; therefore obtaining numerous results, in a timely manner, is imperative so as to forecast the cost of materials and labor per automotive model, while still focusing on quality. Additionally, the sophistication of sensors Walker's invention discloses a level of detail that supersedes the applicant's disclosure of manually changing the size of the person for a software point of view, for example. Although Socks' teachings disclose less than two sensors and uses goggles while Walker teachings are not application specific, both are manipulating the same software. The integration of the two inventions mentioned cover the limitations mentioned in the application.

GROUP I

Claim 1: *A system for subjective evaluation of a vehicle design within a virtual environment using virtual reality comprising: a scaleable physical property representative of the vehicle design, wherein the physical property is adjusted according to a scale ratio for an evaluator of the vehicle design; a computer system for digitally creating a virtual environment having a virtual human immersed within, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator; a motion capture system for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; and a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.*

(As stated by Socks: column 2, 5th paragraph; and column 3 paragraphs 1-3. As stated by Walker: column 2, paragraph 7; and column 3, paragraphs 1-3)

Claim 2: *The system of claim 1 wherein the motion capture system includes an instrumented glove worn by the evaluator for sensing motion of the evaluator's hand. (As stated by Walker: column 9, lines 1-16)*

Claim 3: *The system of claim 1 wherein the motion capture system includes magnetic spatial tracking sensors located on the evaluator for sensing motion of the evaluator's full body. (As stated by Walker: columns 3-4)*

Claim 4: *The system of claim 1 wherein the virtual reality display mechanism includes a head mounted display mechanism worn by the evaluator for seeing the virtual environment through an eye of the virtual human. (As stated by Socks: Figure 1 and column 5, lines 24-29)*

Claim 5: *The system of claim 1 wherein the computer system includes at least one video terminal displaying a view of the virtual environment as seen through an eye of the virtual human. (As stated by Socks: column 7, lines 23-32)*

Claim 6: *The system of claim 1 wherein the computer system includes at least one video terminal displaying a third person view of the virtual human immersed within the virtual environment. (As stated by Socks: column 7, lines 23-32)*

Claim 7: *A method as set forth in claim 1, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population. (As stated by Walker: column 4, lines 40-53)*

GROUP II

As to claims 8-14, they recite the same or equivalent limitations and are rejected based upon the same reasoning as claims 1-7, *supra*.

Claim 8: *A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment, wherein the virtual environment is created within a computer system and includes the vehicle design; determining a scale ratio for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population; preparing an adjustable property using the vehicle design and the scale ratio; growing the virtual human within the virtual environment to virtually represent a scaled evaluator; aligning the virtual human in the virtual environment with the evaluator and the property, performing the evaluation of the vehicle design by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle. (As stated by Walker: column 6, lines 42-66. As stated by Socks: column 4, lines 8-38)*

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Claim 9: *A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of measuring an anthropometric dimension of the evaluator. (As stated by Walker: Abstract)*

Claim 10: *A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of positioning a motion capture system on the evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment. (As stated by Walker: column 3, lines 3-19. As stated by Socks: column 3, paragraphs 2-4)*

Claim 11: *A method as set forth in claim 8 wherein said step of preparing an evaluator includes providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design. (As stated by Walker: column 3, lines 3-19. As stated by Socks: column 3, paragraphs 2-4)*

Claim 12: *A method as set forth in claim 8 wherein the step of preparing an adjustable property includes the step of determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine adjustability of the property. (As stated by Walker: column 6, lines 42-66.)*

Claim 13: *A method as set forth in claim 8 including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation. (As stated by Walker:7-16)*

Claim 14: *A method as set forth in claim 8 wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system; creating a virtual human digitally to represent the evaluator using the digital motion capture sensor locations for the virtual human, the evaluator's measurements and the scale ratio; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator; and checking that the motion of the virtual human mirrors the motion of the evaluator. (As stated by Walker: column 6, lines 42-66. As stated by Socks: column 4, lines 8-38)*

GROUP III

As to claims 15-20, they recite the same or equivalent limitations and are rejected based upon the same reasoning as claims 8-14,*supra*.

Claim 15: *A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an adjustable property to represent the vehicle design; measuring the evaluator; positioning a full-body motion capture system on an evaluator for sensing a motion of*

Art Unit: 2123

the evaluator and communicating the sensed motion of the evaluator to a computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design determining a scale ratio for the evaluator wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population; adjusting the property using the scale ratio for the evaluator; growing the virtual human in the virtual environment using the measurements of the evaluator and the scale ratio to virtually represent a scaled evaluator; aligning the virtual human in the virtual environment to the evaluator and the property; performing the evaluation of the vehicle design by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle. (As stated by Walker: column 6, lines 42-66. As stated by Socks: column 4, lines 8-38)

Claim 16: *A method as set forth in claim 15, including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation. (As stated by Walker: column 11, paragraphs 6-7)*

Claim 17: *A method as set forth in claim 16 including the step of determining whether to use a new evaluator and using a new evaluator if determined to use a new evaluator. (As stated by Walker: column 11, paragraphs 6-7)*

Claim 18: *A method as set forth in claim 17 including the step of determining whether to revise the scale ratio if determined not to use a new evaluator and revising the scale ratio if determined to revise the scale ratio. (As stated by Walker: column 11, paragraphs 6-7)*

Claim 19: *A method as set forth in claim 15 wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system; creating a virtual human digitally using the motion capture sensor locations for the virtual human and the scaled measurements of the evaluator; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator; and checking that the motion of the virtual human mirrors the motion of the evaluator. (As stated by Walker: column 7, paragraphs 1-7)*


Claim 20: *A method as set: forth in claim 15, including the step of determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine adjustability of the property. (As stated by Walker: column 11, paragraph 6)*

Correspondence Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704.

10. Any inquire of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

September 11 , 2003


W. Hansen
Art. 2123
Patent Examiner

NOTICE OF DRAFTSPERSON'S PATENT DRAWING REVIEW

The drawing(s) filed (insert date) 8/2/00 are:

- A. ☐ approved by the Draftsperson under 37 CFR 1.84 or 1.152.
B. ☒ objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reasons indicated below. Corrected drawings are required.

1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings: Black ink or Color (3 sets required).

☐ Color drawings are not acceptable until petition is granted. Fig(s) _____
☐ Pencil and non black ink not permitted. Fig(s) _____

2. PHOTOGRAPHS. 37 CFR 1.84(b)

☐ One (1) full-tone set is required. Fig(s) _____
☐ Photographs may not be mounted. 37 CFR 1.84(e)
☐ Photographs must meet paper size requirements of 37 CFR 1.84(f). Fig(s) _____
☐ Poor quality (half-tone). Fig(s) _____

3. TYPE OF PAPER. 37 CFR 1.84(e)

☐ Paper not flexible, strong, white, and durable. Fig(s) _____
☐ Erasures, alterations, overwritings, interlineations, folds, copy machine marks not accepted. Fig(s) _____

4. SIZE OF PAPER. 37 CFR 1.84(f): Acceptable sizes:

21.0 cm by 29.7 cm (DIN size A4) or
21.6 cm by 27.9 cm (8 1/2 x 11 inches)

☐ All drawing sheets not the same size. Sheet(s) _____

☐ Drawings sheets not an acceptable size. Fig(s) _____

5. MARGINS. 37 CFR 1.84(g): Acceptable margins:

Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm

☐ Margins not acceptable. Fig(s) 1, 2

☒ Top (T) ☒ Left (L)
☐ Right (R) ☐ Bottom (B)

6. VIEWS. 37 CFR 1.84(h)

REMINDER: Specification may require revision to correspond to drawing changes. e.g., if Fig. 1 is changed to Fig. 1A, Fig 1B and Fig. 1C, etc., the specification, at the Brief Description of the Drawings, must likewise be changed.

☐ Views not labeled separately or properly. Fig(s) _____

7. SECTIONAL VIEWS. 37 CFR 1.84(h)(3)

☐ Sectional designation should be noted with Arabic or Roman numbers. Fig(s) _____

8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)

☐ Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned so that the top becomes the right side, except for graphs. Fig(s) _____

9. SCALE. 37 CFR 1.84(k)

☐ Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction. Fig(s) _____

10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)

☒ Lines, numbers & letters not uniformly thick and well defined, clean, durable, and black (poor line quality). Fig(s) 1-5

11. SHADING. 37 CFR 1.84(m)

☐ Solid black areas pale. Fig(s) _____
☐ Solid black shading not permitted. Fig(s) _____

12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.84(p)

☐ Numbers and reference characters not plain and legible. Fig(s) _____

☐ Figure legends are poor. Fig(s) _____
☐ Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(1) Fig(s) _____

☐ English alphabet not used. 37 CFR 1.84(p)(2) Fig(s) _____

☐ Numbers, letters and reference characters must be at least 32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3). Fig(s) _____

13. LEAD LINES. 37 CFR 1.84(q)

☐ Lead lines missing. Fig(s) _____

14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.84(t)

☐ Sheets not numbered consecutively, and in Arabic numbers beginning with number 1. Sheet(s) _____

15. NUMBERING OF VIEWS. 37 CFR 1.84(u)

☐ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig(s) _____

16. DESIGN DRAWINGS. 37 CFR 1.152

☐ Surface shading shown not appropriate. Fig(s) _____

☐ Solid black surface shading is not permitted except when used to represent the color black as well as color contrast. Fig(s) _____

COMMENTS:

Reviewer A. D.

If you have questions, call (703) 305-8404.

Date 8/25/03

Attachment to Paper No. 9

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Docket Number (Optional)

20

Application Number

Applicant(s)

Filing Date

Herewith

Group Art Unit

1c869 U.S. PTO
09/630918



U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
THS	✓	5,583,526	12/10/96	Socks et al.	345	8	
THS	✓	5,831,584	11/3/98	Socks et al.	708	505	

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

THS	✓	Motor Vehicle Dimensions, - SAE J1100 June 1993, pgs. 34.119 - 34.157, SAE Recommended Practice

EXAMINER

Thomas Stevens

DATE CONSIDERED

September 3 2003

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

200-06

SERIAL NO.

09/630,918

Applicants: Juliet C. Kraal and Daniel Arbitter

FILING

August 2, 2000

GROUP

2173

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
THS	4,882,692	11/21/1989	Saxton et al.	345	661	
THS	5,119,309	06/02/1992	Cavendish et al.	700	182	
THS	5,197,120	03/23/1993	Saxton et al.	345	661	
THS	5,293,479	03/08/1994	Quintero et al.	345	841	
THS	5,799,293	08/25/1998	Kaepf	706	45	
THS	6,090,148	07/18/2000	Weber et al.	703	8	
THS	6,096,086	08/01/2000	Weber et al.	703	8	
THS	6,096,087	08/01/2000	Weber et al.	703	8	
THS	6,110,216	08/29/2000	Weber et al.	703	8	
THS	6,113,643	09/05/2000	Weber et al.	703	8	
THS	6,113,644	09/05/2000	Weber et al.	703	8	

RECEIVED
OCT 07 2002
Technology Center 2100

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

THS		- "Interactive Graphics Package For Human Engineering And Layout Of Vehicle Workspace", Gerald F. Rabideau and James Farnady, Department of Systems Design, University of Waterloo, Waterloo, Ontario, Canada, 1976.
THS		- "Simulation-Aided Design of Man/Machine Interfaces in Automated Industries", Gary I. Davis and James R. Buck, School of Industrial Engineering, Purdue University, West Lafayette, Indiana, 1981.
THS		- "RAPID: Prototyping Control Panel Interfaces", Karl Freburger, OOPSLA '87 Proceedings, October 4-8, 1987.

EXAMINER

James Stevens

DATE CONSIDERED

September 3 2003

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Notice of References Cited	Application/Control No. 09/630,918	Applicant(s)/Patent Under Reexamination KRAAL ET AL.	
	Examiner Thomas H. Stevens	Art Unit 2123	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,793,382	08-1998	Yerazunis et al.	345/474
	B	US-5,846,086	12-1998	Bizzi et al.	434/247
	C	US-5,631,861	05-1997	Kramer, James F.	703/7
	D	US-5,930,155	07-1999	Tohi et al.	703/8
	E	US-5,963,891	10-1999	Walker et al.	702/150
	F	US-5,792,031	08-1998	Alton, Michael J.	482/78
	G	US-2003/0134676 A1	07-2003	Kang, Shin-Chang	463/36
	H	US-5,921,780	08-1999	Myers, Nicole J.	434/69
	I	US-5,831,584	11-1998	Socks et al.	345/8
	J	US-6,253,167 B1	06-2001	Matsuda et al.	703/11
	K	US-2002/0140633 A1	10-2002	Rafii et al	345/8
	L	US-			
	M	US-			

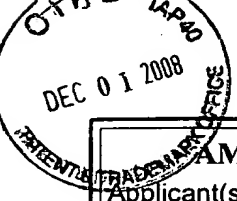
FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



AMENDMENT TRANSMITTAL LETTER (Large Entity) Applicant(s): Juliet C. Kraal et al.	Docket No. 200-0646
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Serial No. 09/630,918	Filing Date August 2, 2000	Examiner T. Stevens	Group Art Unit 2123
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Invention: **SYSTEM AND METHOD OF SUBJECTIVE EVALUATION OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT USING A VIRTUAL REALITY**

TO THE COMMISSIONER FOR PATENTS:

Transmitted herewith is an amendment in the above-identified application.

The fee has been calculated and is transmitted as shown below.

CLAIMS AS AMENDED					
	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST # PREV. PAID FOR	NUMBER EXTRA CLAIMS PRESENT	RATE	ADDITIONAL FEE
TOTAL CLAIMS	20 -	20 =	0 x	\$18.00	\$0.00
INDEP. CLAIMS	3 -	3 =	0 x	\$86.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT					\$0.00

☒ No additional fee is required for amendment.


☐ Please charge Deposit Account No. 06-1510 in the amount of

☐ A check in the amount of to cover the filing fee is enclosed.

☒ The Director is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 06-1510

☒ Any additional filing fees required under 37 C.F.R. 1.16.

☒ Any patent application processing fees under 37 CFR 1.17.


Signature

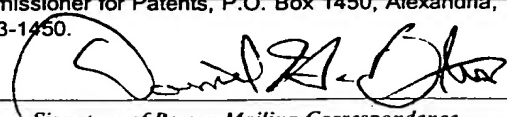
Dated: December 26, 2003

Daniel H. Bliss (Reg. No. 32,398) [0693.00239]
Bliss McGlynn, P.C.
2075 West Big Beaver Road, Suite 600
Troy, Michigan 48084
(248) 649-6090

Record I.D. 81056549

cc:

I certify that this document and fee is being deposited on December 26, 2003 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.


Signature of Person Mailing Correspondence

Daniel H. Bliss
Typed or Printed Name of Person Mailing Correspondence

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit: 2123)
)
Examiner: T. Stevens)
)
Applicant(s): Juliet C. Kraal et al.)
)
Serial No.: 09/630,918)
)
Filing Date: August 2, 2000)
)
For: SYSTEM AND METHOD OF)
SUBJECTIVE EVALUATION OF A)
VEHICLE DESIGN WITHIN A VIRTUAL)
ENVIRONMENT USING VIRTUAL)
REALITY)
)

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

In response to the Office Action dated September 26, 2003, please amend the
above-identified application as follows:

CERTIFICATE OF MAILING: (37 C.F.R. 1.8) I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service with sufficient postage as First Class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on December 26, 2003, by Daniel H. Bliss
Daniel H. Bliss

IN THE CLAIMS:

Please amend claims 1 and 7 as follows:

1. (CURRENTLY AMENDED) A system for subjective evaluation of a vehicle design within a virtual environment using virtual reality comprising:

 a scaleable physical property representative of the vehicle design, wherein the physical property is adjusted according to a scale ratio for an evaluator of the vehicle design;

 a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator;

 a motion capture system for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; and

 a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

2. (ORIGINAL) The system of claim 1 wherein the motion capture system includes an instrumented glove worn by the evaluator for sensing motion of the evaluator's hand.

3. (ORIGINAL) The system of claim 1 wherein the motion capture system includes magnetic spatial tracking sensors located on the evaluator for sensing motion of the evaluator's full body.

4. (ORIGINAL) The system of claim 1 wherein the virtual reality display mechanism includes a head mounted display mechanism worn by the evaluator for seeing the virtual environment through an eye of the virtual human.

5. (ORIGINAL) The system of claim 1 wherein the computer system includes at least one video terminal displaying a view of the virtual environment as seen through an eye of the virtual human.

6. (ORIGINAL) The system of claim 1 wherein the computer system includes at least one video terminal displaying a third person view of the virtual human immersed within the virtual environment.

7. (CURRENTLY AMENDED) A ~~method~~ system as set forth in claim 1, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population.

8. (ORIGINAL) A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of:

preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment, wherein the virtual environment is created within a computer system and includes the vehicle design;

determining a scale ratio for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population;

preparing an adjustable property using the vehicle design and the scale ratio;
growing the virtual human within the virtual environment to virtually represent a scaled evaluator;
aligning the virtual human in the virtual environment with the evaluator and the property,
performing the evaluation of the vehicle design by the evaluator; and
using the evaluation of the vehicle design in the design of the vehicle.

9. (ORIGINAL) A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of measuring an anthropometric dimension of the evaluator.

10. (ORIGINAL) A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of positioning a motion capture system on the evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment.

11. (ORIGINAL) A method as set forth in claim 8 wherein said step of preparing an evaluator includes providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

12. (ORIGINAL) A method as set forth in claim 8 wherein the step of preparing an adjustable property includes the step of determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine adjustability of the property.

13. (ORIGINAL) A method as set forth in claim 8 including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation.

14. (ORIGINAL) A method as set forth in claim 8 wherein said step of growing the virtual human includes the steps of:

assuming an initial posture by the evaluator;

digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system;

creating a virtual human digitally to represent the evaluator using the digital motion capture sensor locations for the virtual human, the evaluator's measurements and the scale ratio;

aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator; and

checking that the motion of the virtual human mirrors the motion of the evaluator.

15. (ORIGINAL) A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of:

preparing an adjustable property to represent the vehicle design;

measuring the evaluator;

positioning a full-body motion capture system on an evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to a computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment;

providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design

determining a scale ratio for the evaluator wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population;

adjusting the property using the scale ratio for the evaluator;

growing the virtual human in the virtual environment using the measurements of the evaluator and the scale ratio to virtually represent a scaled evaluator;

aligning the virtual human in the virtual environment to the evaluator and the property;

performing the evaluation of the vehicle design by the evaluator; and

using the evaluation of the vehicle design in the design of the vehicle.

16. (ORIGINAL) A method as set forth in claim 15, including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation.

17. (ORIGINAL) A method as set forth in claim 16 including the step of determining whether to use a new evaluator and using a new evaluator if determined to use a new evaluator.

18. (ORIGINAL) A method as set forth in claim 17 including the step of determining whether to revise the scale ratio if determined not to use a new evaluator and revising the scale ratio if determined to revise the scale ratio.

19. (ORIGINAL) A method as set forth in claim 15 wherein said step of growing the virtual human includes the steps of:

assuming an initial posture by the evaluator;

digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system;

creating a virtual human digitally using the motion capture sensor locations for the virtual human and the scaled measurements of the evaluator;

aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator; and

checking that the motion of the virtual human mirrors the motion of the evaluator.

20. (ORIGINAL) A method as set forth in claim 15, including the step of determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine adjustability of the property.

REMARKS

Claims 1 and 7 have been amended. Claims 1 through 20 remain in the application.

The abstract of the disclosure was objected to because it contains more than 150 words. Applicants respectfully traverse this objection.

To further prosecution of this application, a new abstract of the disclosure is attached as a separate sheet to this Amendment and contains less than 150 words. It is respectfully submitted that the new abstract of the disclosure is allowable over the objection.

The drawings were objected to by the Draftsperson under 37 C.F.R. 1.84 or 1.152 because the Figures 1 and 2 top left margins are unacceptable. The drawings were also objected to under 37 C.F.R. 1.83(a) because the drawings must show every feature of the invention specified in the claims. Applicants respectfully traverse both of these objections.

Attached to this Amendment is a copy of the drawings for Figures 1 and 2 with proper top left margins and Figures 3A through 5 with lines, numbers and letters that are uniformly thick and well defined, clean, and durable. As to items 62 and 42, it is clear from Figure 1 that the design team 64 is viewing the items 62 and 42. As to claim 7, this claim has been amended to recite a system and not a method. Also, the subject matter of claim 7 is a ratio that is described in the specification and is not required to be stated or illustrated in a drawing. Therefore, it is respectfully submitted that the drawings are acceptable over the objections.

Claims 1 through 20 were rejected under 35 U.S.C. § 103 as being unpatentable over Socks et al. (U.S. Patent No. 5,831,584) in view of Walker et al. (U.S. Patent No. 5,963,891). Applicants respectfully traverse this rejection.

U.S. Patent No. 5,831,584 to Socks et al. discloses a hand calibration system and virtual display selection for a vehicle simulator. A system 10 includes an actual space 12 and a

seat 14 mounted in the space 12. A person 16 having a hand 18 can sit on the seat 14 and grasp an actual steering wheel 20 that is rotatably mounted in the space 12. Also, the person 16 can depress actual brake and accelerator pedals 22, 24 that are movably mounted in the space 12. The person 16 can view a visual display element, such as goggles 26 which are worn by the person 16. The goggles 26 are suitable virtual reality goggles which include left and right two- or three-dimensional visual display screens which respectively present to the person's left and right eyes a virtual image of the actual space 12. The virtual image of the space 12 includes images of the actual components in the space 12, as the components would actually be seen by a person sitting in the seat 14. Also, the virtual image of the space 12 that is presented by the goggles 26 includes images of simulated objects that are in the virtual space but not in the actual space, as the objects are intended to be seen by a person sitting in the seat 14 were the objects actually present at their simulated location in the space 12. The image of the virtual space 1212 presents an image of a virtual hand 1818 that is located relative to the virtual space 1212 analogously to where the actual hand 18 is located relative to the actual space 12. The person 16 can attempt to manipulate one or more of the virtual objects shown on the goggles 26, and in so doing, observe the image of his virtual hand 1818. Socks et al. does not disclose a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator.

U.S. Patent No. 5,963,891 to Walker et al. discloses a system for tracking body movements in a virtual reality system. A sensing section 56 includes a sensor cable 64 coupled to a transducer 62. A flexible support cable 66 is provided for supporting the sensor cable 64. The support cable 66 is provided to control flexure of the sensor cable 64 by maintaining the curvature of the sensor 64 along a selected axis and to prevent inadvertent flexure or crimping of

the cable 64. A guide tube 68 is disposed over the support cable 66 and interposed between the cables 66, 64 to allow relative longitudinal movement therebetween. The guide tube 68 preferably comprises a resilient material, such as extruded nylon, and has a smooth inner surface 70 to allow the support cable 66 to move freely about therein. The support cable 66 has a diameter of approximately 1/4 inch and preferably comprises a flexible metal alloy, such as brass. The support cable 66 and guide tube 68 are disposed in an opening 72 in the housing 58 and are secured therein to couple the cable 66 and tube 68 to the housing 58. The support cable 66 and guide tube 68 are secured to the housing 58 to prevent the sensing section 56 from detaching from the signal generating section 54. An analog-to-digital (A-D) signal converter 154 provides a representative data value for each of the signals generated by the bend sensors 16 and pressure sensors 18. The A-D converter 154 may have an input 156 coupled to the data bus 148 to receive analog signals and have an output 158 coupled to the processor 150 for providing the processor 150 with digital data representing the movement indicating signals. Alternatively, the A-D converter 154 may comprise a program stored in the memory device 152 and invoked by the processor, or may comprise a portion of the processor 150 itself. After the analog signals are converted to digital values, the data is normalized to provide signals indicating actual movement of the articulations of the wearer 20. The data is normalized to calibrate the bend sensors 16 to accommodate varying ranges of motion, for example, of different wearers of the system 10. The calibration procedure enables the transducers 62 and potentiometer 122 to provide signals to the data unit 142 within a desired arbitrary data range for determining the range of motion of the monitored articulations. Walker et al. does not disclose a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator.

In contradistinction, claim 1, as amended, clarifies the invention claimed as a system for subjective evaluation of a vehicle design within a virtual environment using virtual reality including a scaleable physical property representative of the vehicle design, wherein the physical property is adjusted according to a scale ratio for an evaluator of the vehicle design. The system also includes a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator. The system includes a motion capture system for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment. The system further includes a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

The United States Court of Appeals for the Federal Circuit (CAFC) has stated in determining the propriety of a rejection under 35 U.S.C. § 103, it is well settled that the obviousness of an invention cannot be established by combining the teachings of the prior art absent some teaching, suggestion or incentive supporting the combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 U.S.P.Q. 929 (Fed. Cir. 1984). The law followed by our court of review and the Board of Patent Appeals and Interferences is that “[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.” In re Rinehart, 531 F.2d 1048, 1051, 189 U.S.P.Q. 143, 147 (C.C.P.A. 1976). See also In re Lalu, 747 F.2d 703,

705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984) (“In determining whether a case of prima facie obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification.”)

None of the references cited, either alone or in combination with each other, teach or suggest the claimed invention of claim 1. Specifically, Socks et al. ‘584 merely discloses a hand calibration system and virtual display selection for a vehicle simulator in which an image of a virtual hand is located relative to a virtual space analogously to where an actual hand is located relative to an actual space. Socks et al. ‘584 lacks a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator. In Socks et al. ‘584, only an eye and hand of the evaluator is immersed within the virtual environment and, therefore, the use of such a virtual reality vehicle simulator is limited to studies involving an evaluator’s hand and view. Walker et al. ‘891 merely discloses a system for tracking body movements in a virtual reality system in which analog signals are converted to digital values and data is normalized to provide signals indicating actual movement of articulations of a wearer. Walker et al. ‘891 lacks a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator. As such, there is no suggestion or motivation in the art to combine Socks et al. ‘584 and Walker et al. ‘891 together.

The present invention sets forth a unique and non-obvious combination of a system for subjective evaluation of a vehicle design within a virtual environment using virtual reality personally immerses a digital human representing the full-body of an evaluator into a

virtual vehicle environment. The reference, if modifiable, fails to teach or suggest the combination of a system for subjective evaluation of a vehicle design within a virtual environment using virtual reality including a scaleable physical property representative of the vehicle design, wherein the physical property is adjusted according to a scale ratio for an evaluator of the vehicle design, a computer system for digitally creating a virtual environment having a virtual human immersed within the virtual environment, wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator, a motion capture system for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment, and a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design as claimed by Applicants. The Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claim 1 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

As to claim 8, claim 8 claims the present invention as a method of subjective evaluation of a vehicle design within a virtual environment using virtual reality. The method includes the steps of preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment, wherein the virtual environment is created within a computer system and includes the vehicle design. The method also includes the steps of determining a scale ratio for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population. The method includes the steps of preparing an adjustable property using the vehicle design and the scale ratio and growing the virtual human within the virtual environment to virtually represent a scaled

evaluator. The method further includes the steps of aligning the virtual human in the virtual environment with the evaluator and the property, performing the evaluation of the vehicle design by the evaluator, and using the evaluation of the vehicle design in the design of the vehicle. Claim 15 is similar to claim 8 and includes other features of the present invention.

None of the references cited, either alone or in combination with each other, teach or suggest the claimed invention of claims 8 and 15. Specifically, Socks et al. '584 merely discloses a hand calibration system and virtual display selection for a vehicle simulator in which an image of a virtual hand is located relative to a virtual space analogously to where an actual hand is located relative to an actual space. Socks et al. '584 lacks growing a virtual human within a virtual environment to virtually represent a scaled evaluator. In Socks et al. '584, only an eye and hand of the evaluator is immersed within the virtual environment and, therefore, the use of such a virtual reality vehicle simulator is limited to studies involving an evaluator's hand and view. Walker et al. '891 merely discloses a system for tracking body movements in a virtual reality system in which analog signals are converted to digital values and data is normalized to provide signals indicating actual movement of articulations of a wearer. Walker et al. '891 lacks growing a virtual human within a virtual environment to virtually represent a scaled evaluator. As such, there is no suggestion or motivation in the art to combine Socks et al. '584 and Walker et al. '891 together.

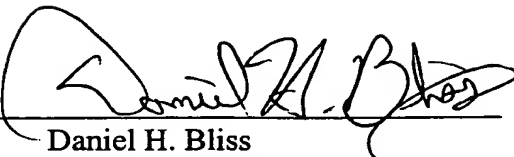
The present invention sets forth a unique and non-obvious combination of a system for subjective evaluation of a vehicle design within a virtual environment using virtual reality personally immerses a digital human representing the full-body of an evaluator into a virtual vehicle environment. The reference, if modifiable, fails to teach or suggest the combination of a method for subjective evaluation of a vehicle design within a virtual environment using virtual reality including the steps of preparing an evaluator of a vehicle design

for immersion as a virtual human in the virtual environment, determining a scale ratio for the evaluator, preparing an adjustable property using the vehicle design and the scale ratio, growing the virtual human within the virtual environment to virtually represent a scaled evaluator, aligning the virtual human in the virtual environment with the evaluator and the property, performing the evaluation of the vehicle design by the evaluator, and using the evaluation of the vehicle design in the design of the vehicle as claimed by Applicants. The Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claims 8 and 15 and the claims dependent therefrom are allowable over the rejection under 35 U.S.C. § 103.

Obviousness under § 103 is a legal conclusion based on factual evidence (In re Fine, 837 F.2d 1071, 1073, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988), and the subjective opinion of the Examiner as to what is or is not obvious, without evidence in support thereof, does not suffice. Since the Examiner has not provided a sufficient factual basis, which is supportive of his/her position (see In re Warner, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173, 178 (C.C.P.A. 1967), cert. denied, 389 U.S. 1057 (1968)), the rejection of claims 1 through 20 is improper. Therefore, it is respectfully submitted that claims 1 through 20 are allowable over the rejection under 35 U.S.C. § 103.

Based on the above, it is respectfully submitted that the claims are in a condition for allowance, which allowance is solicited.

Respectfully submitted,

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Date: December 26, 2003

Attorney Docket No.: 0693.00239
Ford Disclosure No.: 200-0646

ABSTRACT OF THE DISCLOSURE

A system and method for subjective evaluation of a vehicle design within a virtual environment includes a scaleable physical property representative of the vehicle design and a computer system for digitally creating a virtual environment having a virtual human immersed within. The system also includes a motion capture system for sensing a motion of an evaluator and communicating the sensed motion of the evaluator to the computer system and a virtual reality display mechanism for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

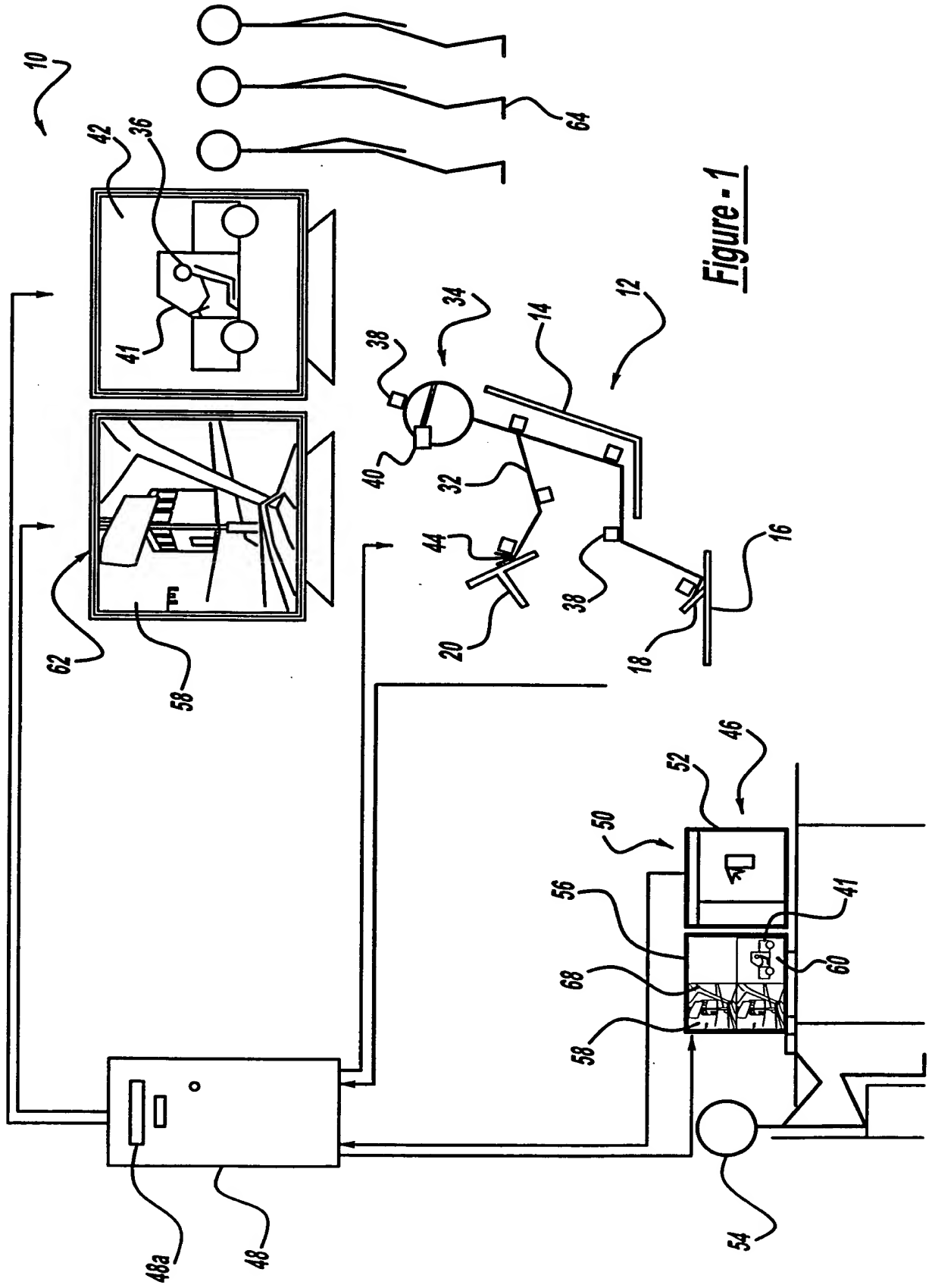


Figure - 1

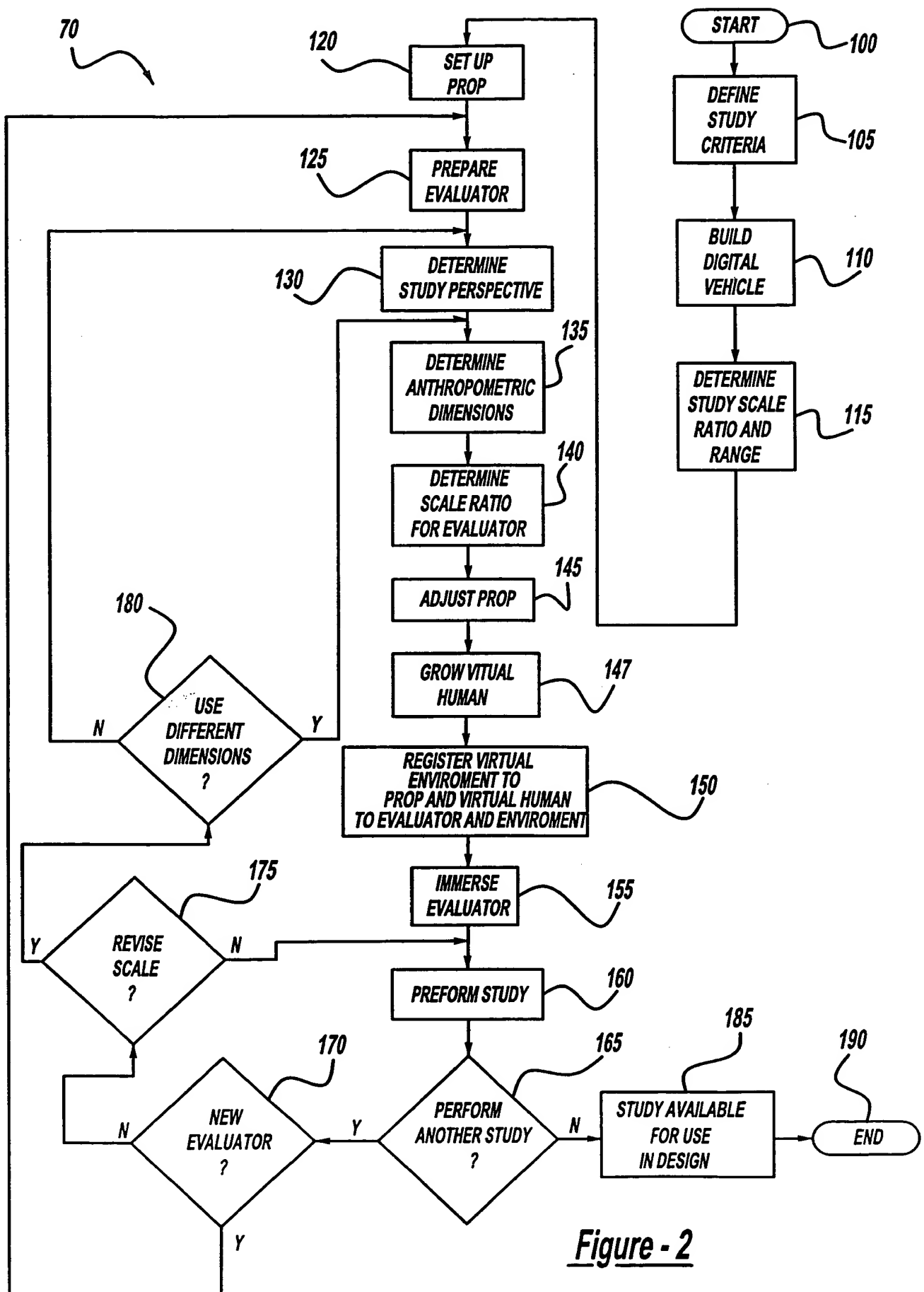


Figure - 2

Figure - 3A

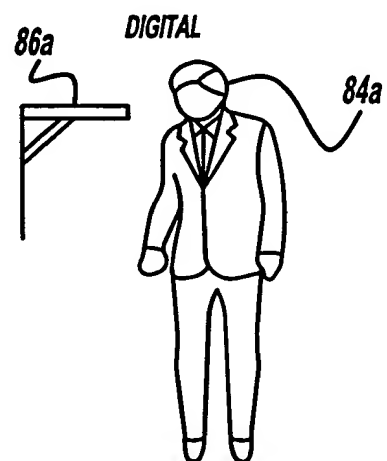
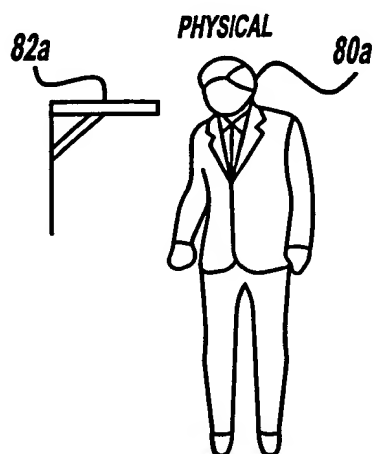


Figure - 3B

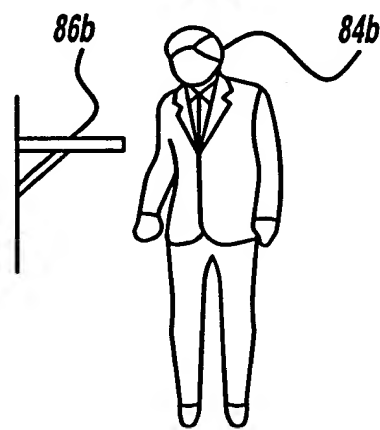
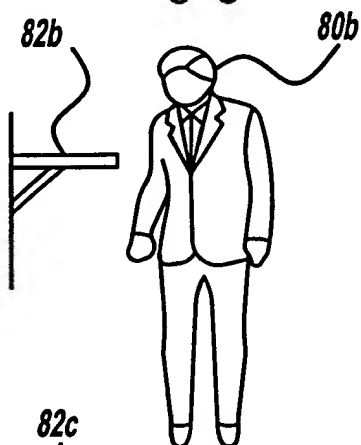


Figure - 3C

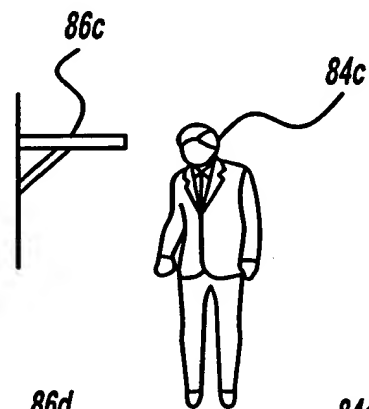
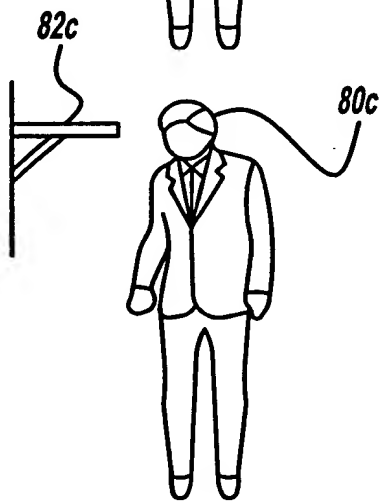
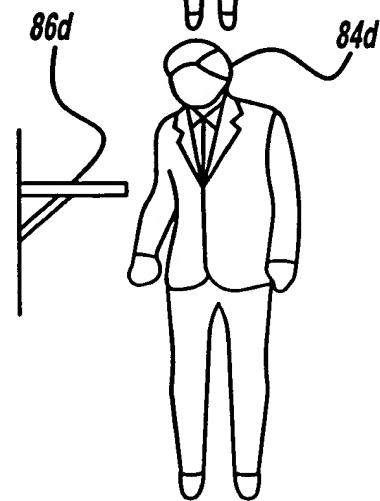
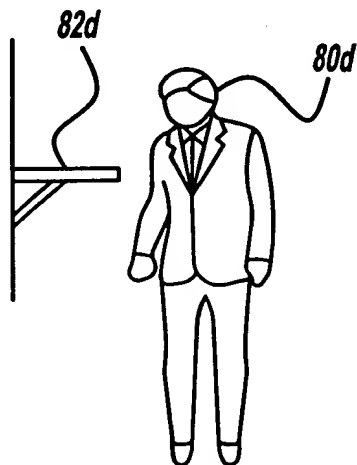


Figure - 3D



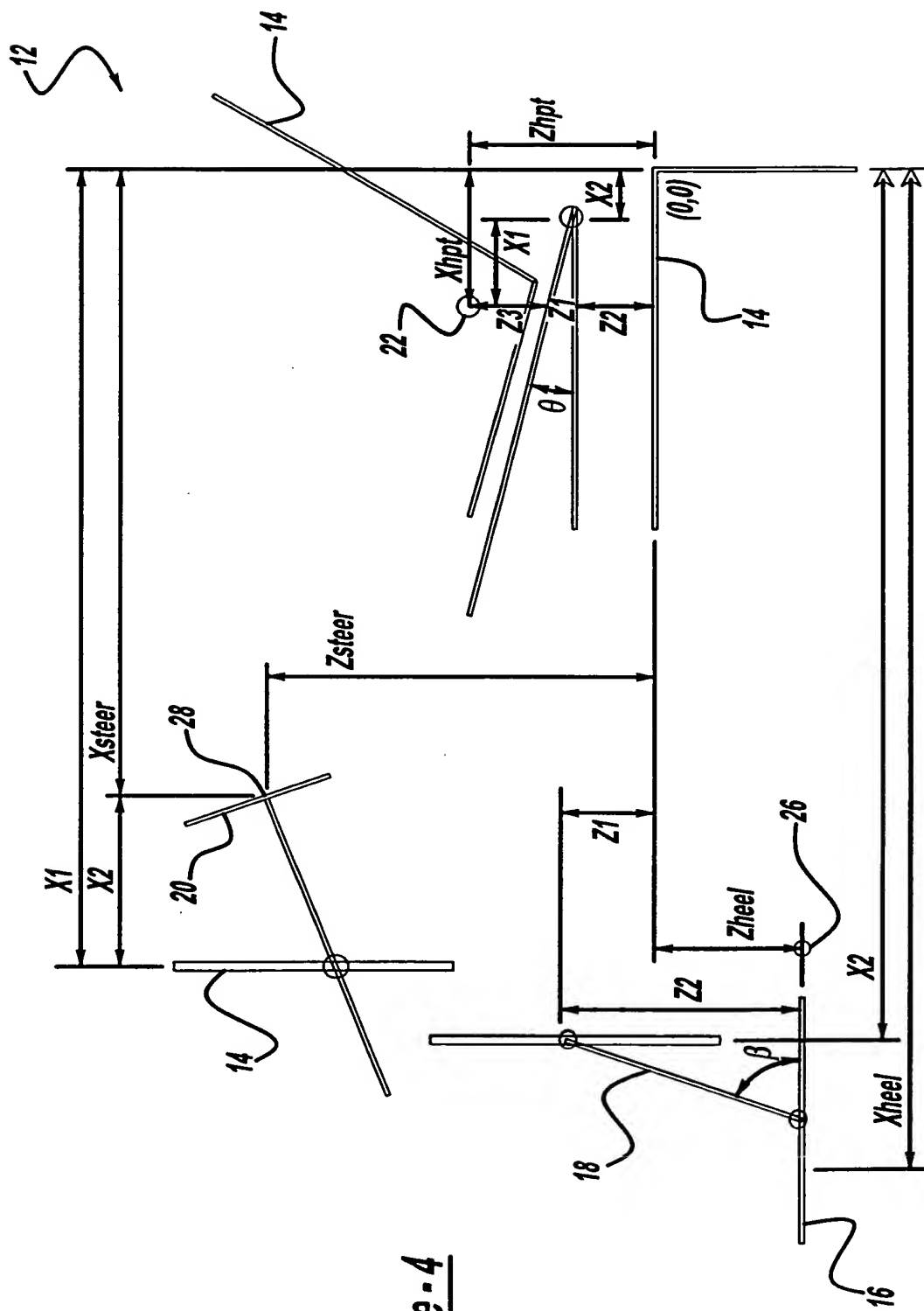


Figure - 4

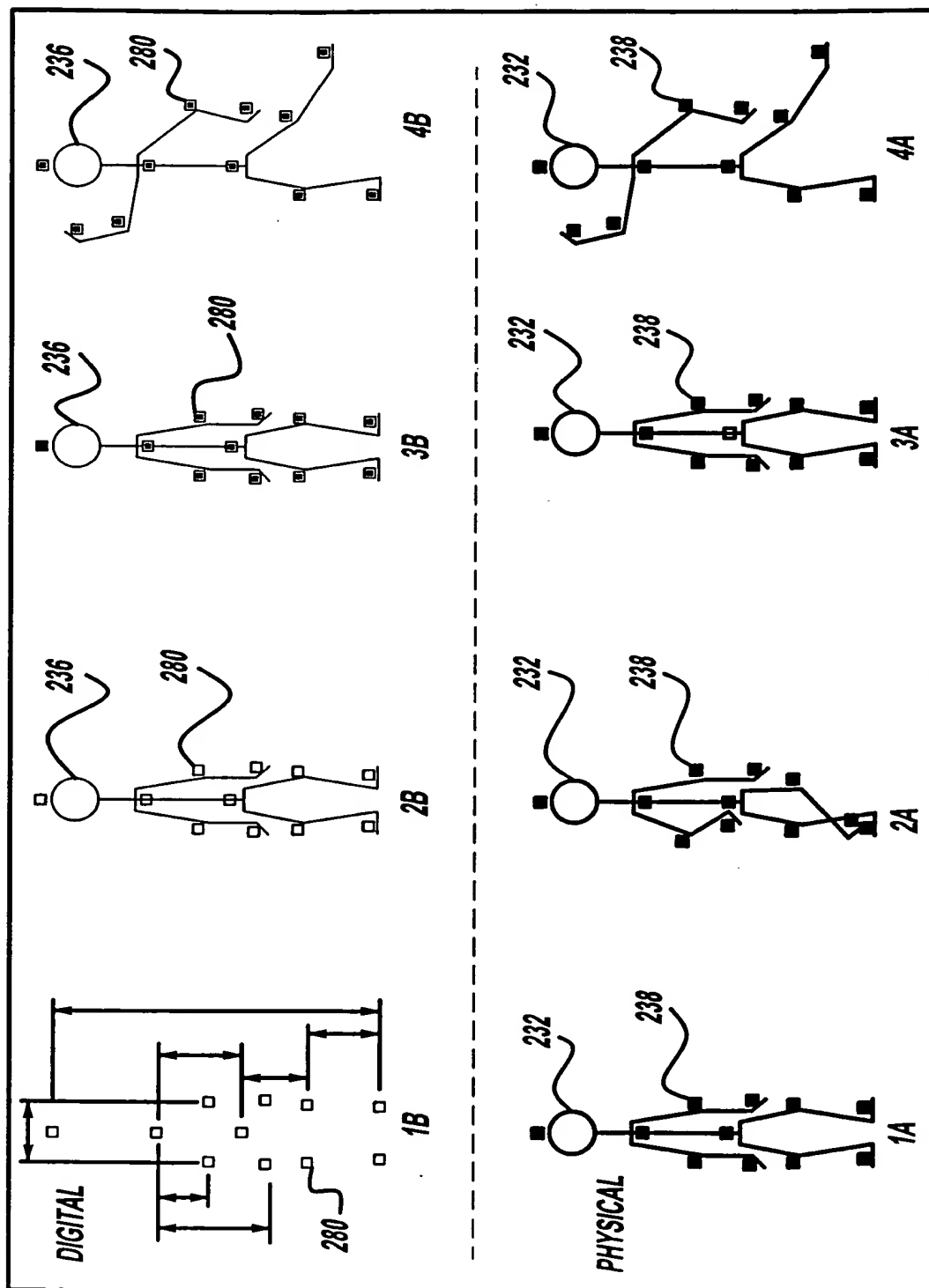


Figure - 5

Please date stamp and return this postcard acknowledging receipt of the following:

Amendment Transmittal (in duplicate) and Amendment.

Examiner: T. Stevens

Group Art Unit: 2123

Applicants: Juliet C. Kraal et al.

Serial No.: 09/630,918

Filing Date: August 2, 2000

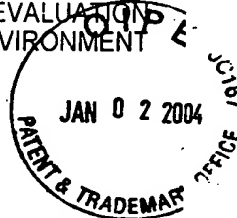
Title: SYSTEM AND METHOD OF SUBJECTIVE EVALUATION
OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT
USING A VIRTUAL REALITY

Attorney: D.H. Bliss

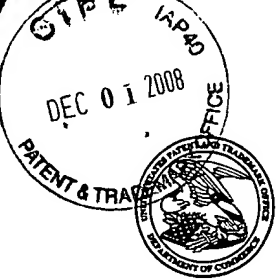
Attorney Docket No.: 0693.00239 (Ford Global)

Ford Disclosure No.: 200-0646

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908

7590 03/22/2004
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EXAMINER

STEVENS, THOMAS H

ART UNIT PAPER NUMBER

2123

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/630,918

Applicant(s)

KRAAL ET AL.

Examiner

Thomas H. Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2000 and 06 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/06/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 have been presented for examination. The examiner acknowledges amended claims 1-7.
2. The applicant is reminded to insert the provisional application number, located on page one of the specification.

Response to Amendments

3. The applicants are thanked for correcting the abstract and the drawings (pg. 8, lines 1-18).

Response to Rejections (103 Rejections (pgs. 8-15))

4. Regarding applicants' response to 35 U.S.C. 103(a) rejections: Applicants' arguments filed on January 6, 2004 have been fully considered and are persuasive, **based on the previous prior art used in the rejection.** The applicants' are correct in stating Socks et al. (U.S. Patent 5,831,584) does not disclose a virtual human immersed within the vehicle (pg. 9, lines 17-19). Additionally, the applicants' state Walker et al. (U.S. Patent 5,963,891) doesn't teach the growing or changing the appearance of a virtual human within a virtual environment (pg. 14, lines 9-15). Based on those previous facts the rejection, based on art used, are withdrawn; however **new rejections** accompany this action.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 8-13,15-18 are rejected under 35 U.S.C. 102(b) as being anticipated by RAMSIS (Human Solutions Inc. (1997)).

RAMSIS is a 3D CAD ergonomics tool, which is designed to aid the German automotive industry for the development of vehicles and cockpits.

Claim 8: A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality (pg. 4, first paragraph) said method comprising the steps of: preparing an evaluator of a vehicle design for immersion as a virtual human in the virtual environment, wherein the virtual environment is created within a computer system and includes the vehicle design; determining a scale ratio for the evaluator, wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population; preparing an adjustable property using the vehicle design (pgs. 1 and 2, Anthropometric Data Base section) and the scale ratio; growing the virtual human within the virtual environment to virtually represent a scaled evaluator; aligning the virtual human in the virtual environment with the evaluator and the property, performing the evaluation of the

vehicle design by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle.

Claim 9: A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of measuring an anthropometric dimension of the evaluator (pgs. 1 and 2, Anthropometric Data Base section).

Claim 10: A method as set forth in claim 8 wherein said step of preparing an evaluator includes the step of positioning a motion capture system on the evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system (pg. 4, Motion Tracking), so that the motion of the evaluator controls the motion of the virtual human in the virtual environment.

Claim 11: A method as set forth in claim 8 wherein said step of preparing an evaluator includes providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system (pg. 3, Available Platforms), for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

Claim 12: A method as set forth in claim 8 wherein the step of preparing an adjustable property includes the step of determining a scale ratio range for a member of a target population represented in the evaluation and using the scale ratio range to determine

adjustability of the property (pgs.1 and 2, Anthropometric Data Base; pg.3, Achievability Analysis).

Claim 13: A method as set forth in claim 8 including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation (pg. 4, Visual Feedback).

Claim 15: A method of subjective evaluation of a vehicle design within a virtual environment using virtual reality, said method comprising the steps of: preparing an adjustable property to represent the vehicle design; measuring the evaluator; positioning a full-body motion capture system on an evaluator for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to a computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment ; providing the evaluator with a virtual reality display mechanism operatively communicating with the computer system (pgs.1 and 2, Anthropometric Data Base; pg.3, Achievability Analysis), for providing the evaluator a view of the virtual environment while evaluating the vehicle design determining a scale ratio for the evaluator wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population; adjusting the property using the scale ratio for the evaluator; growing the virtual human in the virtual environment using the measurements of the evaluator and the scale ratio to virtually represent a scaled evaluator; aligning the virtual human in the virtual

environment to the evaluator and the property; performing the evaluation of the vehicle design by the evaluator; and using the evaluation of the vehicle design in the design of the vehicle (pg.1 first paragraph; pg. 4, Application and Customers).

Claim 16: A method as set forth in claim 15, including the step of determining whether to perform a new evaluation and performing a new evaluation if determined to perform a new evaluation (pgs.1 and 2: Anthropometric Data Base, Health and Comfort Analysis; and 4, feedback).

Claim 17: A method as set forth in claim 16 including the step of determining whether to use a new evaluator and using a new evaluator if determined to use a new evaluator (pgs.1 and 2: Anthropometric Data Base, Health and Comfort Analysis; and 4, feedback).

Claim 18: A method as set forth in claim 17 including the step of determining whether to revise the scale ratio if determined not to use a new evaluator and revising the scale ratio if determined to revise the scale ratio (pgs.1 and 2: Anthropometric Data Base, Health and Comfort Analysis; and 4, feedback).

Claim Rejections - 35 USC § 103

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

✓ 8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-7, 14, 19 and 20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over RAMSIS (Human Solutions (1997)), in view of Purschke et al. ("Virtual Reality-New Methods for Improving and Accelerating the Development Process in Vehicle Styling and Design" (1998)).

RAMSIS is a 3D CAD ergonomics tool, which is designed incorporation with the German automotive industry for the development of vehicles and cockpits; but it doesn't teach virtual reality automotive design simulation via a CyberGlove, and multiple sensors.

Purschke et al. teaches methods of improving car interior design via virtual reality by way of multiple monitors as well as by a CyberGlove.

It would have been obvious at the time of invention to one of ordinary skill in the art to modify the teachings of RAMSIS in view of Purschke et al. since the addition of

multiple sensors with the CyberGlove is advantageous to ergonomic design and analysis of vehicle interiors.

Claim 1: A system for subjective evaluation of a vehicle design within a virtual environment using virtual reality comprising: a scaleable physical property representative of the vehicle design, wherein the physical property (RAMSIS: pg. 3, achievability section) adjusted according to a scale ratio for an evaluator of the vehicle design; a computer system (Purschke: pg. 3, right column, second paragraph) for digitally creating a virtual environment having a virtual human (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) immersed within the virtual environment (Purschke: pg. 9, figure 12), wherein the virtual environment includes the vehicle design and the virtual human virtually represents a scaled evaluator; a motion capture system for sensing a motion of the evaluator and communicating the sensed motion of the evaluator to the computer system, so that the motion of the evaluator controls the motion of the virtual human in the virtual environment; and a virtual reality display mechanism operatively communicating with the computer system, for providing the evaluator a view of the virtual environment while evaluating the vehicle design.

Claim 2: The system of claim 1 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the motions capture system includes an instrumented glove (Purschke: pg. 4, left column, second paragraph) worn by the evaluator for sensing motion of the evaluator's hand.

Art Unit: 2123

Claim 3: The system of claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the motion capture system includes magnetic spatial tracking sensors (Purschke: pg. 11, left column, line 26) located on the evaluator for sensing motion of the evaluator's full body.

Claim 4: The system of claim I (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the virtual reality display mechanism includes a head mounted display mechanism worn by the evaluator (Purschke pg. 11, left column, line 26) for seeing the virtual environment through an eye of the virtual human.

Claim 5: The system of claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the computer system includes at least one video terminal displaying a view of the virtual environment as seen through an eye of the virtual human (Purschke: pg. 9, figure 13).

Claim 6: The system of claim 1(RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein the computer system includes at least one video terminal displaying a third person view of the virtual human immersed within the virtual environment (Purschke: pg. 9, section 3.1).

Claim 7: A system as set forth in claim 1 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section), wherein the scale ratio is a ratio between a predetermined dimension of the evaluator and a predetermined dimension of a member of a target population (Purschke: pg. 9, sections 3.1 and 3.1).

Claim 14: A method as set forth in claim 8 wherein said step of growing the virtual human includes the steps of: assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system (RAMSIS: pg. 4, figures 1 and 2); creating a virtual human digitally to represent the evaluator using the digital motion capture sensor locations for the virtual human the evaluator's measurements (RAMSIS: pg. 4, figure 3) and the scale ratio; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator (Purschke: pg. 11, left column, line 26); and checking that the motion of the virtual human mirrors the motion of the evaluator.

Claim 19: A method as set forth in claim 15 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section) wherein said step of growing the virtual human includes the steps of; assuming an initial posture by the evaluator; digitally establishing locations of motion capture sensors positioned on the evaluator in the initial posture using a computer system; creating a virtual human digitally using the motion capture sensor locations for the virtual human and the scaled measurements of

the evaluator; aligning the virtual human with the evaluator, wherein the motion capture sensor locations on the virtual human are aligned with the motion capture sensor locations on the evaluator (Purschke: pg. 11, left column, line 26); and checking that the motion of the virtual human mirrors the motion of the evaluator.

Claim 20: A method as set forth in claim 15 (RAMSIS: pg. 4, virtual feedback section; and pg. 1 and 2 Anthropometric Data Base Section), including the step of determining a scale ratio range for a member of a target population represented in the evaluation (Purschke: pg. 9, left column, 3.1, lines 5-6) and using the scale ratio range to determine adjustability of the property.

Correspondence Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Stevens whose telephone number is (703) 305-0365, Monday-Friday (8:30 am- 5:30 pm) or contact Supervisor Mr. Kevin Teska at (703) 305-9704. The fax number for the group is 703-872-9306.

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (703) 305-3900.

March 12, 2004

THS


KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

200-06

SERIAL NO.

09/630,918

Applicants: Juliet C. Kraal et al.

FILING

August 2, 2000

GROUP

2123

U.S. PATENT DOCUMENTS

AMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
THS	6,036,345	03/14/2000	Jannette et al.	700	97	2/20/98
	6,037,945	03/14/2000	Loveland			
THS	6,084,590	07/04/2000	Robotham et al.	345	419	10/10/97
THS	2002/0000996 A1	01/03/2002	Trika	345	629	10/18/98
						OCT 29 2003
						Technology Center 2100

FOREIGN PATENT DOCUMENTS

DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
					YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

THS		Artificial Intelligence (Understanding Computers), by Time-Life Books, 1986, ISBN 0-8094-5675-3, pages 26-43.
THS		Juran on Quality by Design, by J.M. Juran, The Free Press, 1992, ISBN 0-02-916683-7, pages 406-427, and 462-467.
TH		The Computer Science and Engineering Handbook, by Allen B. Tucker, CRC Press, ISBN: 0-8493-2909-4, 1996, page 1954.

EXAMINER

Tom Steven

DATE CONSIDERED

2/24/04

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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ATTY DOCKET NO.

200-0646

SERIAL NO.

09/630,918

Applicants: Juliet C. Kraal et al.

FILING

August 2, 2000

GROUP

2123

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
THS	5,459,382	10/17/1995	Jacobus et al.	318	568.116	6/9/94
	6,104,159	08/15/2000	Jacobus et al.	318	568	8/15/99
	6,262,738	07/17/2001	Gibson et al.	345	419	12/4/98
	2002/0133264 A1	09/19/2002	Maitoh et al.	700	RECEIVED	01/23/01
	2002/0163497 A1	11/07/2002	Cunningham et al.	345	DA508	05/4/01
						Technology Center 2100

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER

Tom H. H. H.

DATE CONSIDERED

2/24/04

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Notice of References Cited

Application/Control No.

09/630,918

Applicant(s)/Patent Under
Reexamination
KRAAL ET AL.

Examiner

Thomas H. Stevens

Art Unit

2123

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,036,345	03-2000	Jannette et al.	700/97
	B	US-6,084,590	07-2000	Robotham et al.	345/419
	C	US-6,262,738	07-2001	Gibson et al.	345/419
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Juran On Quality by Design, by J.M. Juran, The Free Press, 1992, ISBN 0-02916683-7, pages 406-427, and 462-467.
	V	RAMSIS-The Human Touch to Technology. pg.1-3. http://www.human-solutions.com/prudukkte_ramsis_e.php (1997)
	W	Purschke-F et al. "Virtual Reality-New Methods for Improving and Accelerating the Development Process in Vehicle Styling and Design" IEEE document via Computer Graphics International June 1998. pg.1-11.
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



TRANSMITTAL OF FORMAL DRAWINGS

Docket No.
200-0646

In Re Application Of: **Juliet C. Kraal et al.**

Serial No.	Filing Date	Confirmation No.	Examiner	Art Unit
09/630,918	August 2, 2000	7908	T. Stevens	2123

Invention: **SYSTEM AND METHOD OF SUBJECTIVE EVALUATION OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT USING A VIRTUAL REALITY**

Address to:
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Transmitted herewith are:

5 & 2 copies sheets of formal drawing(s) for this application.

☒ Each sheet of drawing indicates the identifying indicia suggested in 37 CFR Section 1.84(c).

Signature

Daniel H. Bliss (Reg. No. 32,398) [0693.00239]
Bliss McGlynn, P.C.
2075 West Big Beaver Road, Suite 600
Troy, Michigan 48084
(248) 649-6090

Record I.D. 81056549

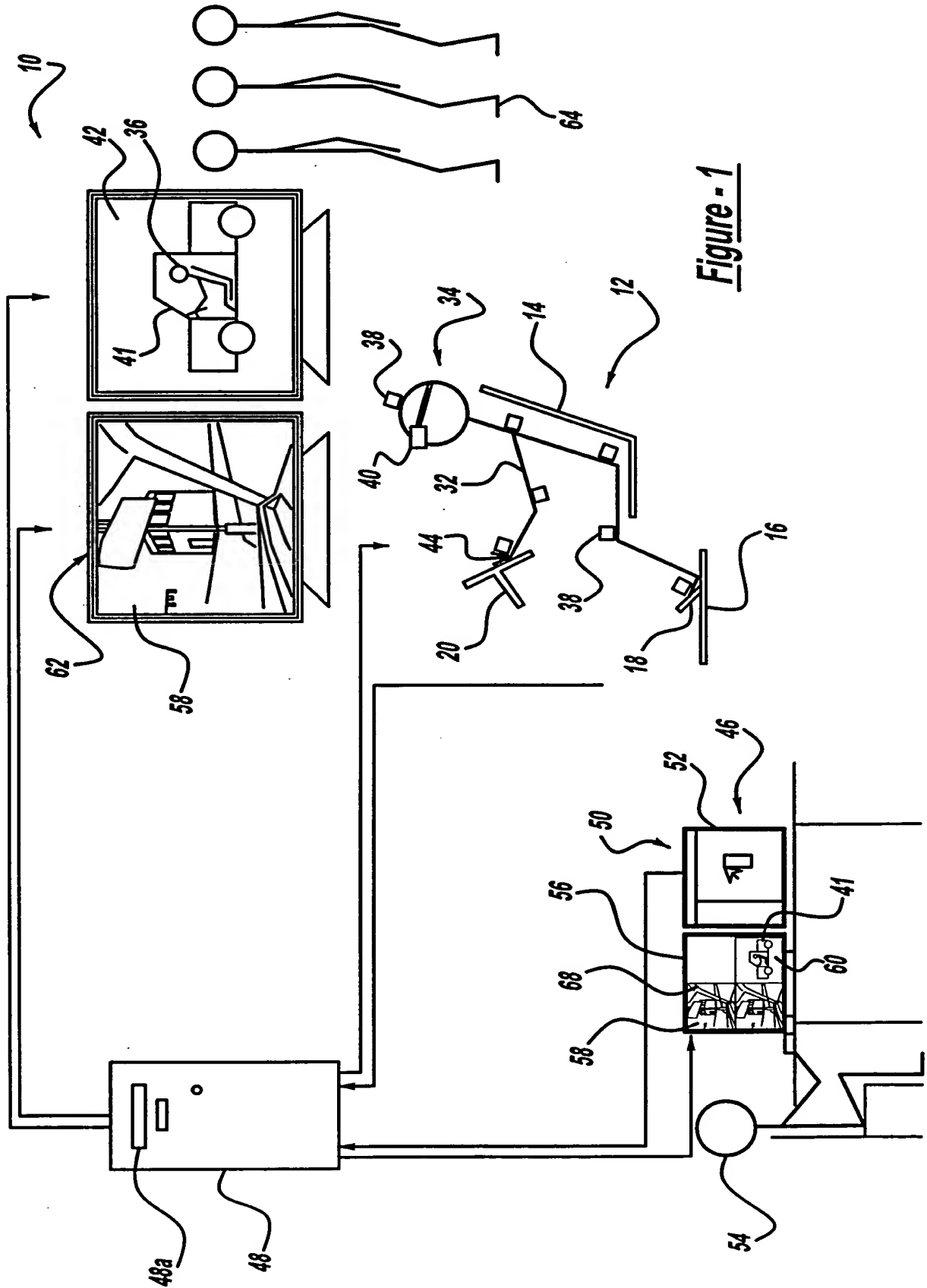
Dated: January 13, 2004

I certify that this document and attached formal drawings are being deposited on January 13, 2004 with the U.S. Postal Service as first class mail under 37 C.F.R. 1.8 and addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature of Person Mailing Correspondence

Daniel H. Bliss

Typed or Printed Name of Person Mailing Correspondence



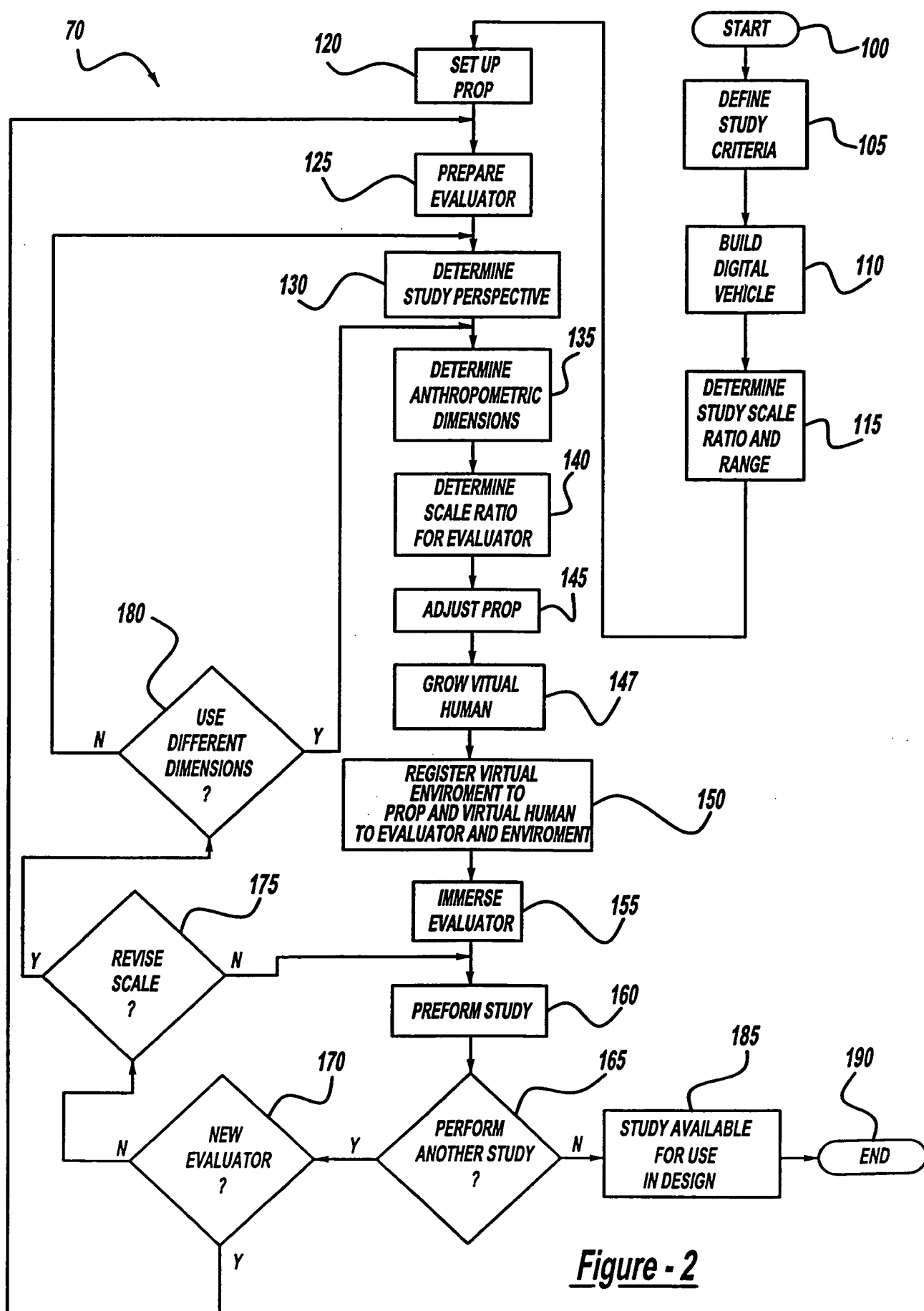


Figure - 2

Figure - 3A

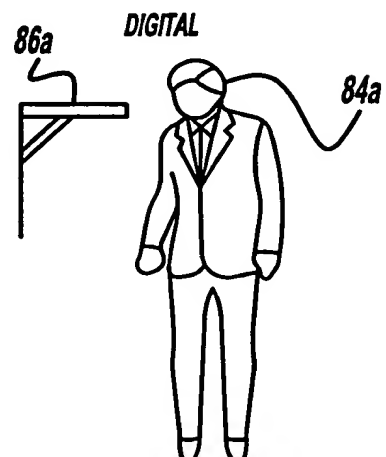
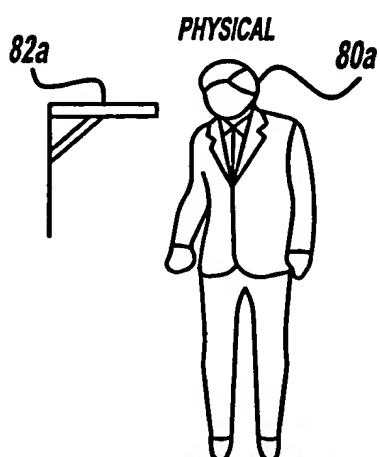


Figure - 3B

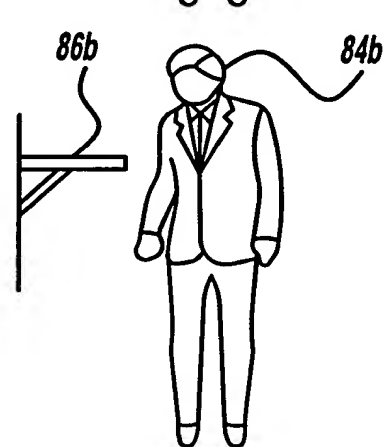
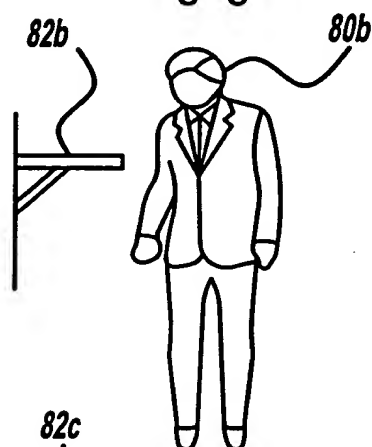


Figure - 3C

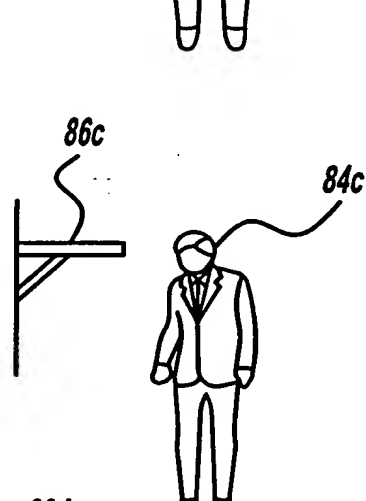
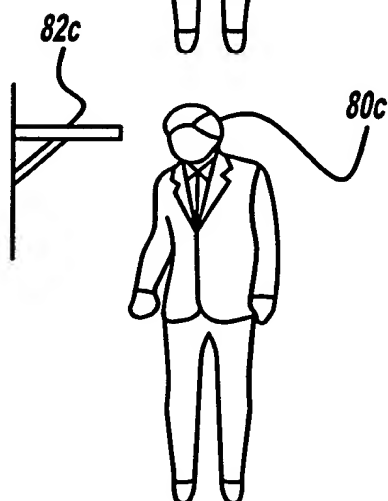
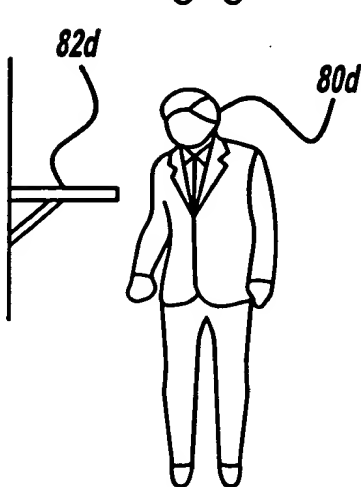


Figure - 3D



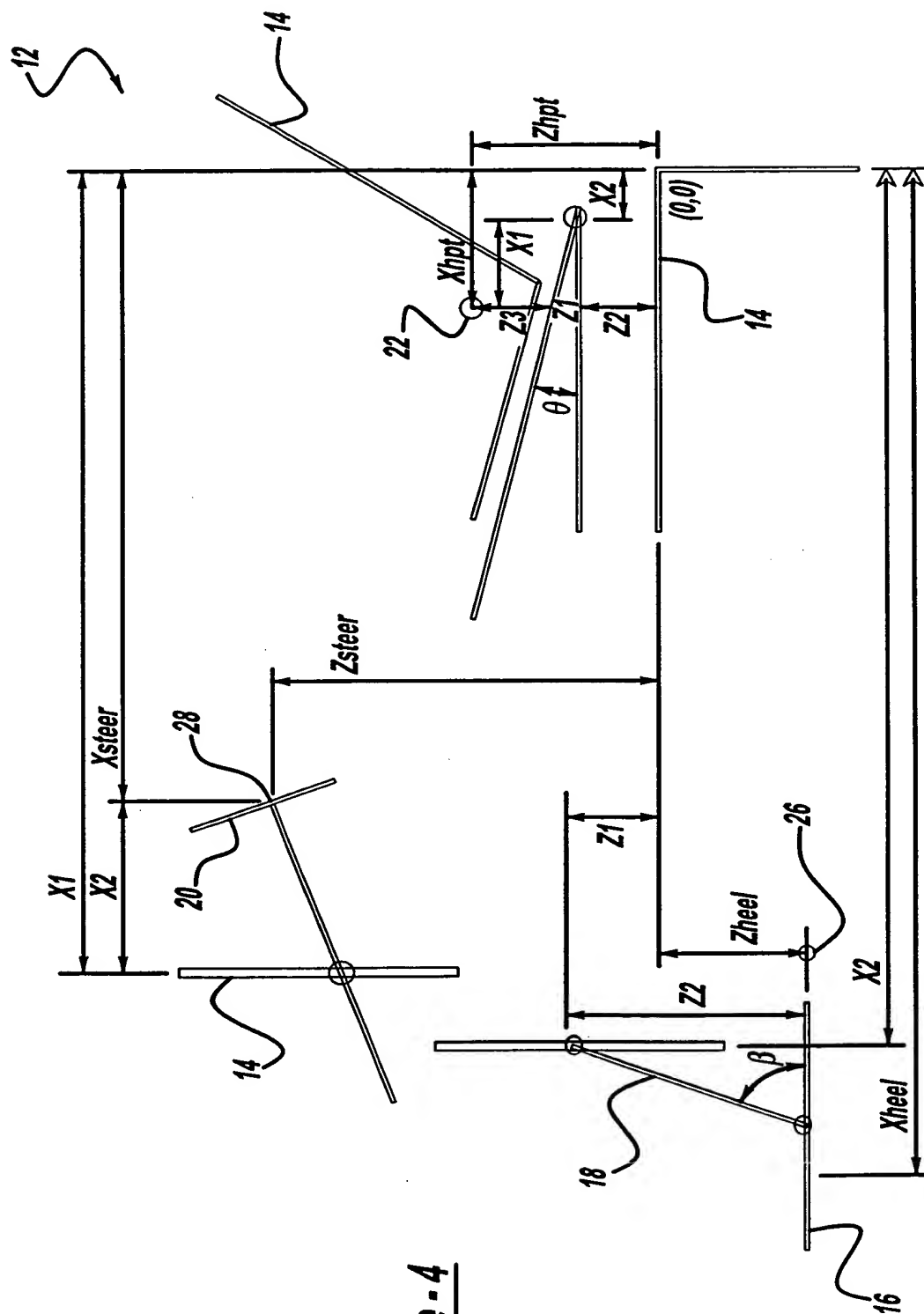


Figure - 4

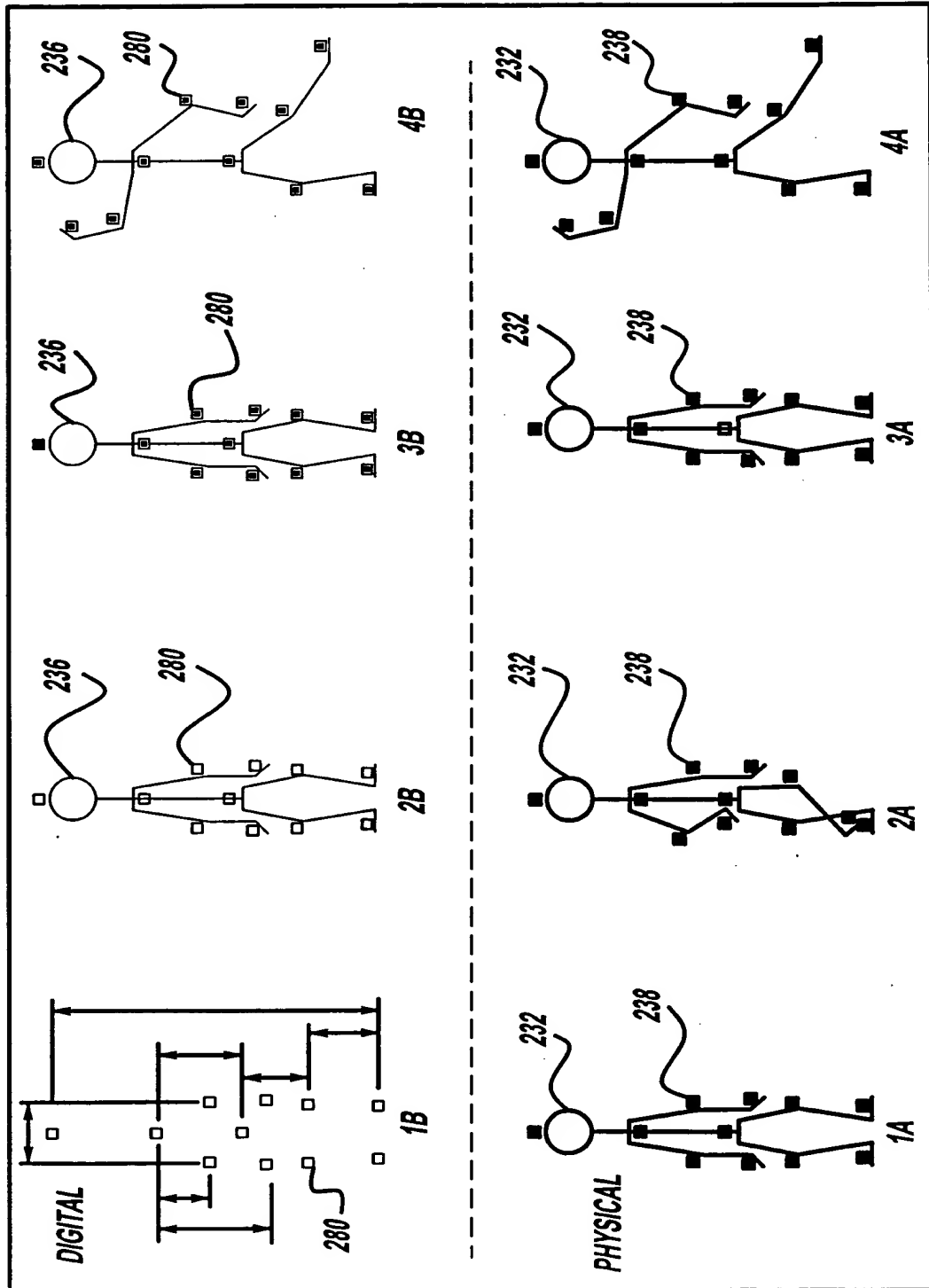


Figure - 5

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Examiner: T. Stevens
Group Art Unit: 2123
Applicants: Juliet C. Kraal et al.
Serial No.: 09/630,918
Filing Date: August 2, 2000

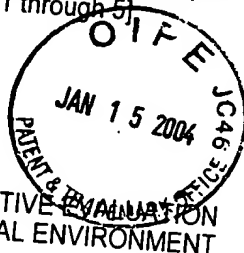
Title: SYSTEM AND METHOD OF SUBJECTIVE EVALUATION
OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT
USING A VIRTUAL REALITY

Attorney: D.H. Bliss
Attorney Docket No.: 0693.00239 (Ford Global)
Ford Disclosure No.: 200-0646
81056549

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Group Art Unit: 2123
Applicants: Juliet C. Kraal et al.
Serial No.: 09/630,918
Filing Date: August 2, 2000
Title: SYSTEM AND METHOD OF SUBJECTIVE EVALUATION
OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT
USING A VIRTUAL REALITY
Attorney: D.H. Bliss
Attorney Docket No.: 0693.00239 (Ford Global)
Ford Disclosure No.: 200-0646
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1/13, 2004.

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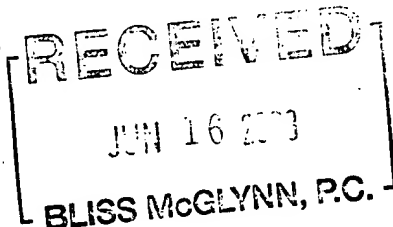
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NOTICE OF ALLOWANCE AND FEE(S) DUE

7590

06/13/2008

Daniel H Bliss
 Bliss McGlynn P C
 Suite 600
 2075 West Big Beaver Road
 Troy, MI 48084



EXAMINER

STEVENS, THOMAS H

ART UNIT

PAPER NUMBER

2121

DATE MAILED: 06/13/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/630,918

08/02/2000

Juliet C. Kraal

200-0646

7908

TITLE OF INVENTION: SYSTEM AND METHOD OF SUBJECTIVE EVALUATION OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT USING A VIRTUAL REALITY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional

NO

\$1440

\$0

\$0

\$1440

09/15/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/630,918

08/02/2000

Juliet C. Kraal

200-0646

7908

TITLE OF INVENTION: SYSTEM AND METHOD OF SUBJECTIVE EVALUATION OF A VEHICLE DESIGN WITHIN A VIRTUAL ENVIRONMENT USING A VIRTUAL REALITY

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1440	\$0	\$0	\$1440	09/15/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
STEVENS, THOMAS H	2121	703-008000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

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Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

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5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908

7590

06/13/2008

Daniel H Bliss
Bliss McGlynn P C
Suite 600
2075 West Big Beaver Road
Troy, MI 48084

EXAMINER

STEVENS, THOMAS H

ART UNIT

PAPER NUMBER

2121

DATE MAILED: 06/13/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1530 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1530 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	09/630,918	KRAAL ET AL.	
	Examiner	Art Unit	
	THOMAS H. STEVENS	2121	

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address-

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Board Decision 03/07/2008.
2. ☒ The allowed claim(s) is/are 1-6,8-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

1. Claims 1-6, 8-20 were previously examined.
2. Claims 1-6, 8-20 are allowable based on the decision by the Board of Appeals.

Drawings

3. The drawings were received on 01/15/2004 are not annotated as "replacement sheets". Correction before payment of the issue fee is required.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715.

If attempts to reach the examiner by telephone are unsuccessful, please contact examiner's supervisor Mr. Albert Decady (571-272-3819). The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Answers to

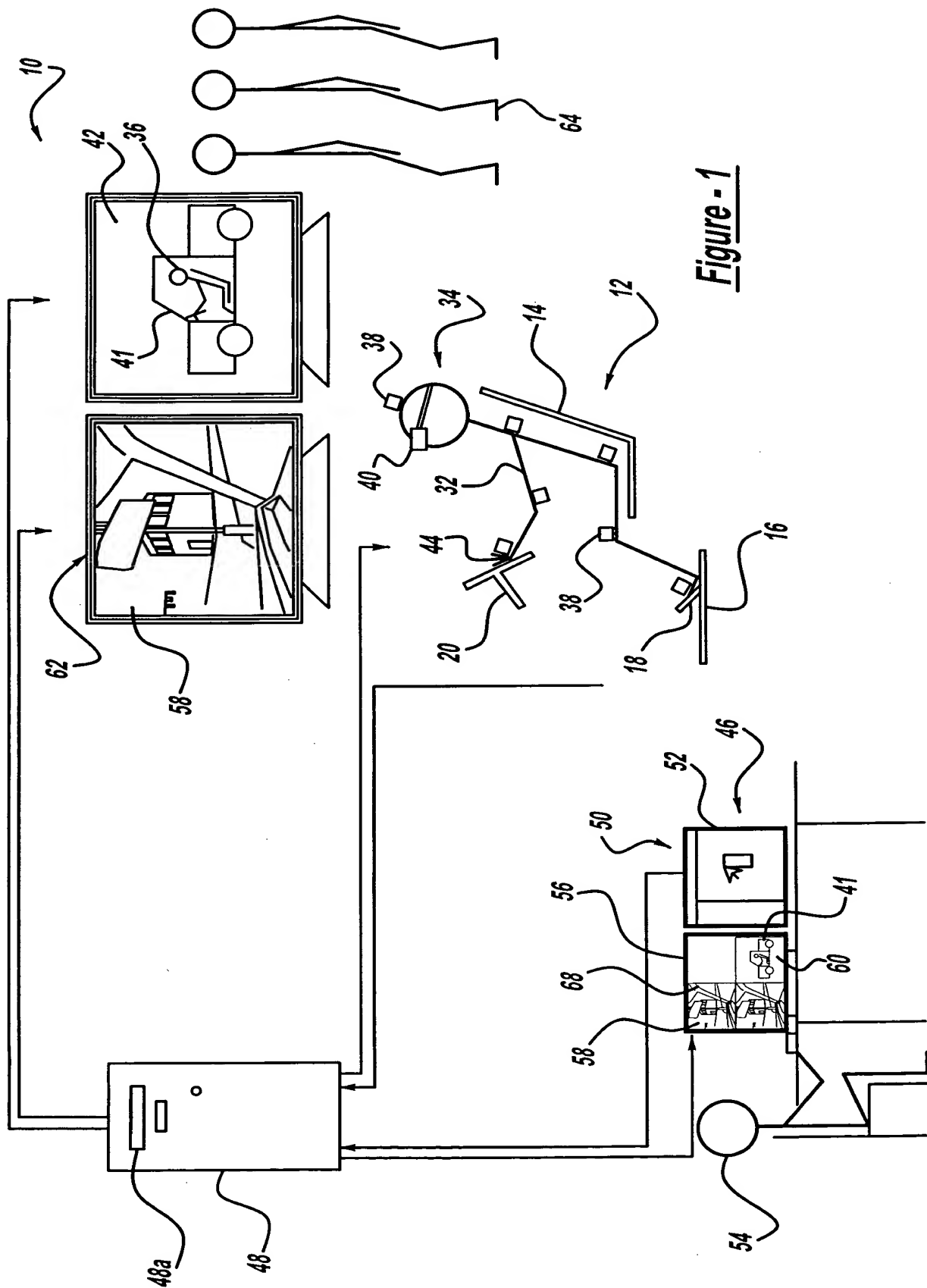
Application/Control Number: 09/630,918

Page 3

Art Unit: 2121

questions regarding access to the Private PAIR system, contact the Electronic Business Center (EBC) (toll-free (866-217-9197)).

/Albert Decady/
Supervisory Patent Examiner
Tech Center 2100



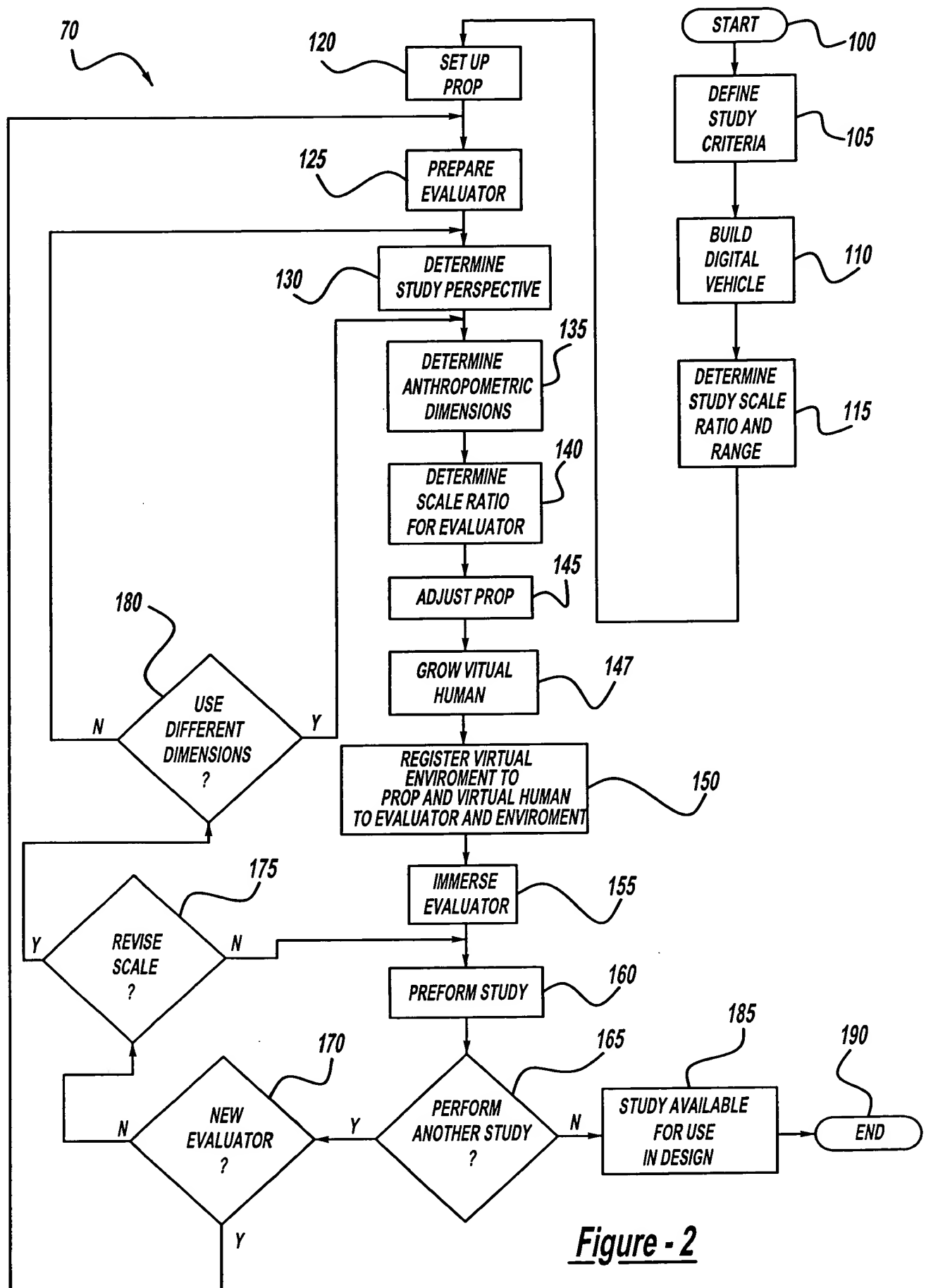


Figure - 3A

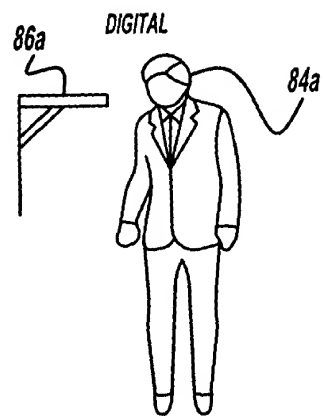
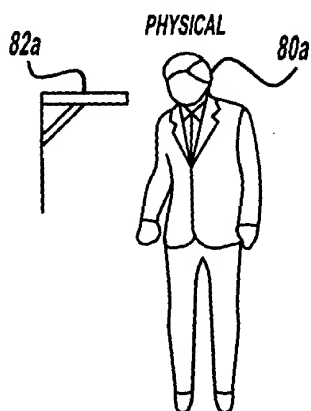


Figure - 3B

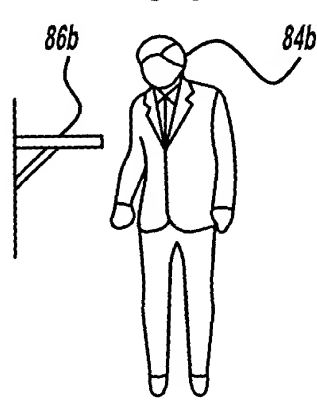
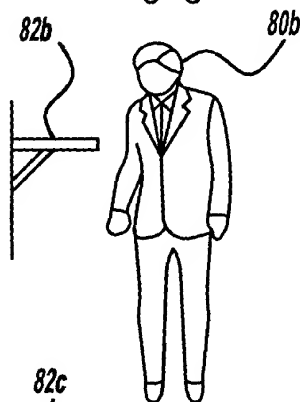


Figure - 3C

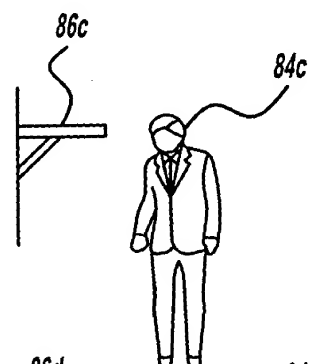
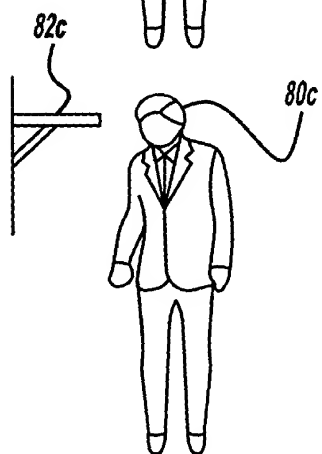
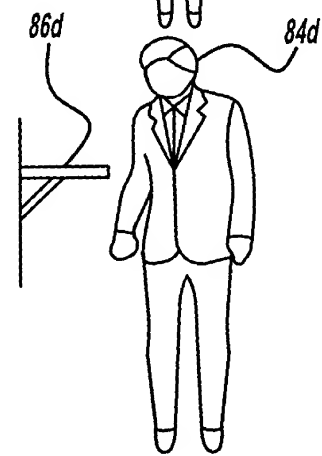
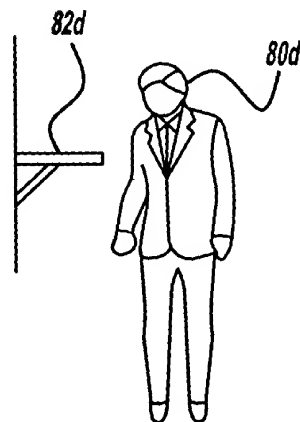


Figure - 3D



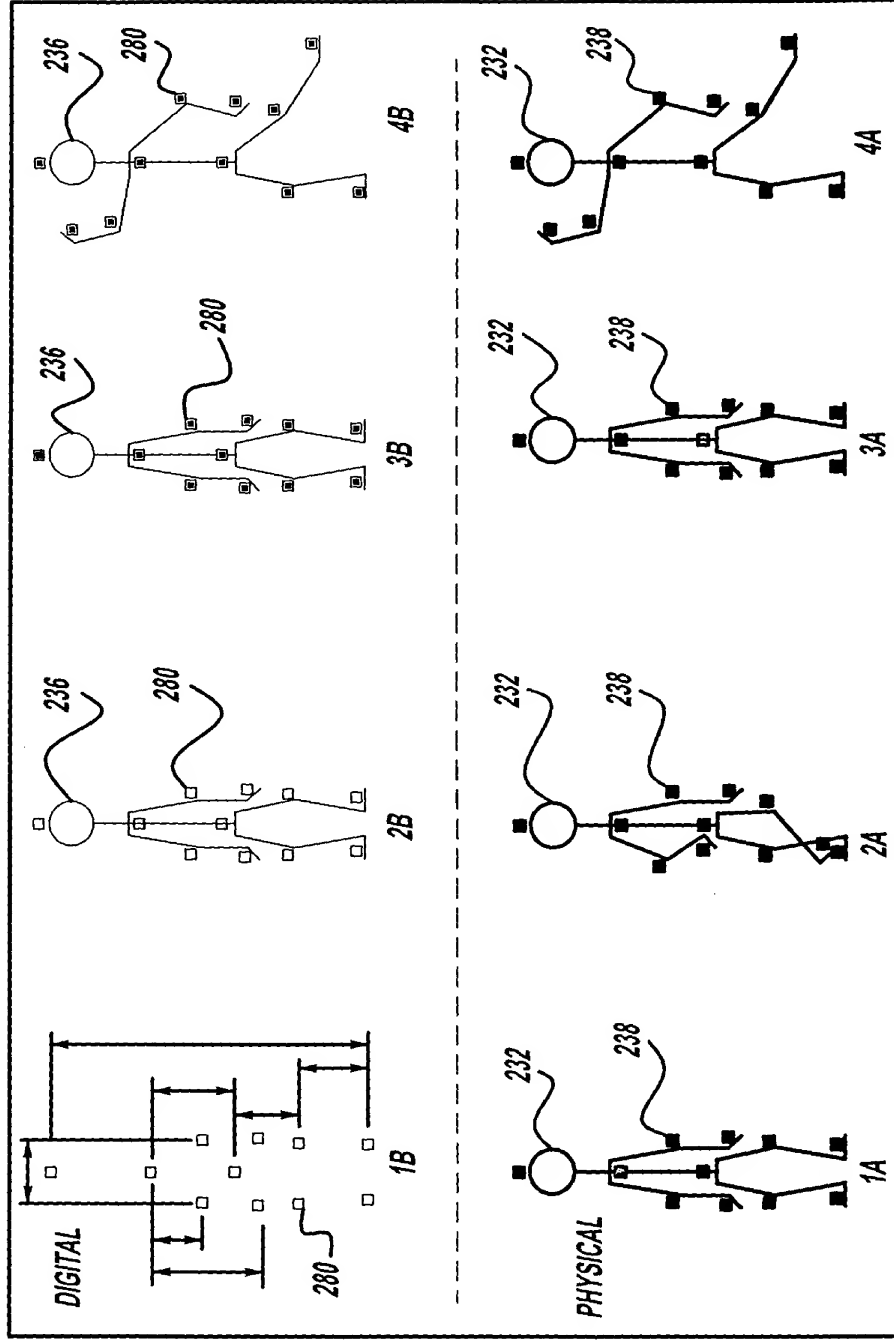
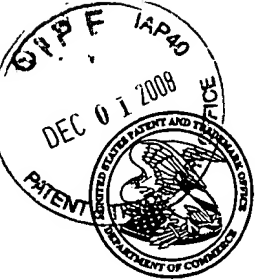


Figure - 5



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,918	08/02/2000	Juliet C. Kraal	200-0646	7908
7590 10/07/2008			EXAMINER	
Daniel H Bliss Bliss McGlynn P C Suite 600 2075 West Big Beaver Road Troy, MI 48084			STEVENS, THOMAS H	
			ART UNIT	PAPER NUMBER
			2121	
			MAIL DATE	DELIVERY MODE
			10/07/2008	PAPER

Notice of Abandonment

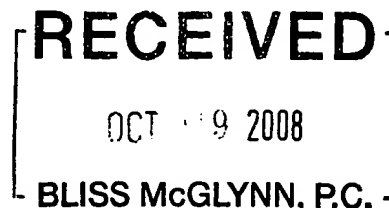
This application is abandoned in view of:

1. ☐ The applicant's failure to timely file a proper reply to the Office letter mailed on _____.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission date _____), which is after the expiration of the period for reply (including a total extension of ____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113(a) to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of:
 - (1) a timely filed amendment which places the application in condition for allowance;
 - (2) a timely filed Notice of Appeal (with appeal fee);
 - (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box e below).
 - (d) ☐ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission date _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$_____ is insufficient. A balance of \$_____ is due.
The issue fee required by 37 CFR 1.18 is \$_____.
The publication fee, if required by 37 CFR 1.18(d), is \$_____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been recieved.
3. ☒ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Trasmission dated _____), which is after the expiration of the period for reply.
 - (b) ☒ No corrected drawing have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filling of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

Petitions to revive under 37 CFR 1.137(a) or (b), or request to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.

Telephone inquiries should be directed to the Office of Data Management at (571) 272-4200.

Patent Publication Branch
Office of Data Management



Attachment to Notice of Abandonment

For questions concerning the notice contact

Office of Patent Publication

Image Assistance Center: 888-786-0101.

Information is also available on the USPTO Internet web site:

<http://www.uspto.gov/web/patents/pubs/abandonnotice.html>

Respond to the Notice of Abandonment by one of the following:

1. Petition To Withdraw Holding of Abandonment (See MPEP 711.03(c) I and 37 CFR § 1.181) No fee required

Where an applicant contends that the application is not in fact abandoned (e.g., a reply was in fact filed), a petition under 37 CFR § 1.181(a) requesting withdrawal of the holding of abandonment is the appropriate course of action. Any petition under 37 CFR § 1.181 to withdraw the holding of abandonment not filed within 2 months of the mail date of a Notice of Abandonment may be dismissed as untimely under 37 CFR § 1.181(f). In order for a petition to be granted, the evidence must be sufficient according to 37 CFR § 1.8(b) Certificate of Mailing, 37 CFR § 1.10 "Express Mail" mailing, or MPEP 503 Postcard Receipt as Prima Facie Evidence. The petition should be addressed as follows:

By mail: Mail Stop: Issue Fee, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450

By facsimile: 571-273-8300

2. Petition To Withdraw Holding Of Abandonment Based On Failure To Receive Office Action (MPEP 711.03(c) II and 37 CFR § 1.181). No fee required

Where an applicant contends that the original Notice of Allowance and Fee(s) Due was never received, if adequately supported, the Office may grant the petition and remail the Office action. The showing required establishing non-receipt of an Office communication must include a statement from the practitioner stating that the Office communication was not received and attesting to the fact that a search of the file jacket and docket records indicates that the Office communication was not received. A copy of the docket record where the nonreceived Office would have been entered had it been received and docketed must be attached to and referenced in practitioner's statement.

Petition should be addressed to the Technology Center handling the application as follows:

By mail: Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450

By facsimile: 571-273-8300

3. Petition To Revive An Abandoned Application (See MPEP 711.03(c) III)

Where there is no dispute as to whether an application is abandoned (e.g., the applicant's contentions merely involve the cause of abandonment) a petition under 37 CFR § 1.137 (a) or (b) (accompanied by the appropriate petition fee) is necessary to revive the abandoned application. The text of these rules is available on the USPTO Internet Web site. Forms for these petitions, "Petition For Revival Of An Application For Patent Abandoned Unavoidably Under 37 CFR § 1.137(a)," PTO/SB/61, and "Petition For Revival Of An Application For Patent Abandoned Unintentionally Under 37 CFR 1.137(b)," PTO/SB/64, are available in the forms section of the USPTO website: <http://www.uspto.gov>.

Petitions under 37 CFR § 1.137 should be addressed to the Office of Petitions as follows:

By mail: Mail Stop Petition, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450

By facsimile: 571-273-8300

Note: Abandonment takes place by operation of law for failure to reply to an Office action or timely pay the issue fee, not by operation of the mailing of a Notice of Abandonment